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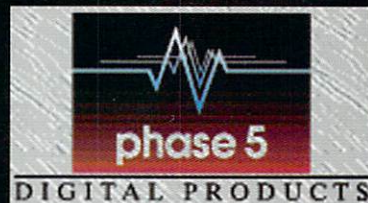
COMPUTING™

Volume 11 No. 7 July 1996
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Your Original AMIGA[®] Monthly Resource

Who will
create the
next
Amiga OS?

Amiga Wars



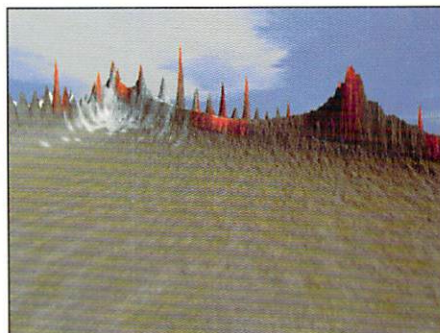
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To: Amazing Computing/Amiga Readers

From: David A. Ziembicki
CEO-QuikPak Corporation

Re: Further Amiga News

I am back from the France VISCORP / Amiga meeting and the good news is that VISCORP has clearly stated a commitment to the current and future Amiga computers. Although the "deal" is not yet completed, all indications are that it is down to the paperwork. The cast of players that VISCORP is speaking with about the future of the Amiga is impressive and the list continues to grow. It is also refreshing to see a technology company ask for suggestions early enough to actually implement some of the suggestions. The open discussion about the company's plans and the consideration given to the already established third party developers is also very positive. As I wrote last month, and was described to the attendees at the meeting in Toulouse about VISCORP's planned product line, the core Amiga technology is the key to a major new product implementations. These products should foster many new hardware and software applications usable on the Amiga models available today. And as we all know, hot applications drive the hardware, and the Amiga has had innovative developers introducing "killer apps" long before those PC guys figured out that graphics and sound, used at the same time, are desirable.

The other good news is that we have gotten the necessary commitments and are bringing back the A1200 NTSC computer to North America! The initial quantities will be limited with the first units hitting dealer shelves around the 4th of July! These units will go quickly, so contact your Amiga dealer soon to reserve your A1200 before they are all gone. By Labor Day, the supply of A1200's should be completely reestablished and we look forward to the A1200's return to the North American market as the best entry level computer available today.

Thanks for the E-Mail, letters, and Faxes. Although we are not currently able to respond directly to each, rest assured all are read and the suggestions are logged and discussed with both Amiga, VISCORP, and when applicable, the third party developers related to the suggestions. Keep the info coming in and if you haven't already, get in touch with your Amiga dealer and local Amiga user group. We will be visiting user group meetings over the next few months to get your input directly and give real time updates on the progress and future of the Amiga.

Thank you for the continued interest and support of the Amiga.

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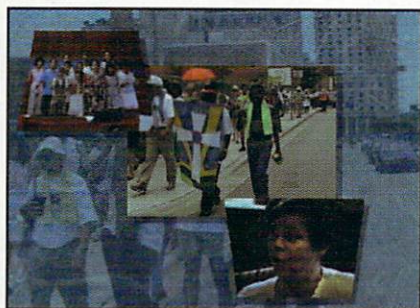
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V-Lab tricks, P.14



Fun With Lyapunovs, P.18



Textured Tiles, P.27



JAZZ.BIT '96 competition, P.42



Voyager Web Browser, P.36

9 New Products

& Other neat stuff

GVP has a new home, Amicom introduces a new web installer, Blitz Basic is back, Paxtron has Amiga parts, Shamms Mortier introduces Grafx Tidbits, and more!

14 Non-linear

Video on a Budget:

V-Lab Motion & Movieshop 3.2

by John P. Jackman

Can't afford the high priced video systems for non-linear editing? The answer may be the V-Lab Motion and its new MovieShop 3.2 software.

18 Fun with Lyapunovs

by R. Shamms Mortier

Create 3D environmental terrain models from the chaotic graphics of Lyapunov space. No they are not related to the Munchkins, but are a class of fractal associated algorithms used to visualize a specific condition of fractal space.

27 Amazing Symmetry

by R. Shamms Mortier

Textured tiles are extremely easy to create and offer the digital artist a few very interesting opportunities. This tool, embedded in DPaint, will help in your obsession to find newer and unique textures.

36 On Line

by Rob Hays

Travel the internet with the newest Amiga browser, Voyager 1.0, and discover more excellent Amiga web sites.

42 JAZZ.BIT 96

Interview by Marc R. Hoffman

Why is a major computer art competition held in Finland? An interview with Martin Keitel, the arts manager of JAZZ.BIT 96.



Amiga Wars

There is a battle for the Amiga user raging on the internet between old and new Amiga firms and a few others. For a system many have tried to write off, the Amiga is attracting a lot of interest.—Page 48.

Publish your Tables



Web Typesetting Part 4: Publishing & Tables

by Randy Finch

How to get your beautiful Home Page on the Web for the world to see. Also, delve into one of the most popular additions to the HTML 3.0 standard known as tables which allow data on a Web page to be structured in a row and column format.—Page 30.

DEPARTMENTS

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Editorial Content

One thing is certain, the Amiga market is never boring. Last month we learned that Escom was divorcing itself of its Amiga business and that VISCORP would be the new owners. This month there are two other companies vying for the opportunity to develop the next Amiga and its operating system. What makes the Amiga a fertile ground for their ventures?

The Amiga user has a lot to offer a new company—loyal, innovative users who are not afraid to embrace new technology. Amiga users as a whole are technically literate and they are well aware of what advanced technology can do. For many of these users, they have made a conscious choice to own an Amiga when the majority of computer users have taken the more conspicuous options of PC or Macintosh. Now, with both the PC and Macintosh markets facing a variety of decisions and fragmentation in the years ahead, Amiga users are being enticed by technological firms bent on using their unique mindset.

PIOS was created from employees and directors of Amiga Technology and Commodore. Phase 5 has already established itself as a successful third party supplier of Amiga products such as accelerators. DraCo has continued its efforts to place the best of the Amiga into a different hardware design. Even the new alternative platform computer company, Be, has been extremely aggressive in demonstrating their hardware designs to Amiga organizations.

What does it all mean? It means the Amiga has a variety of possible futures. It means that these companies will need to cooperate at some juncture in order to maintain a software base for their products.

Amiga Technologies owns the Amiga OS. They have the exclusive rights to the chip set. However, if another company is able to build their system within the confines of AT's structure either by licensing or by additional hardware, then AT will no longer have full control of the future of the Amiga. If AT is not completely successful with the Amiga, they will not be able to continue production. That is the bad news—possibly.

The good news is that the Amiga at least has competition and that Amiga Technologies is now more than aware that they will need to produce both advanced designs and cost effective equipment in order to remain in charge. If AT cannot maintain their position, this also means that there are at least two other firms willing to take up the Amiga and continue its production.

Internet Abuse

It is amazing how a new technology can take hold of a marketplace. The internet is just such a technology. PIOS, phase 5, and VISCORP all used the internet to sponsor their positions and rally support.

This has been good because it has allowed these companies to receive immediate responses to their ideas. They have been able to hear both positive and negative reactions and then adjust their position accordingly.

However, it is bad when many of the ideas are often clipped from the original message and then transmitted and read as if that was the entire thought. These segments often cause a stilted view of what the original version attempted to say.

Our offices received a call earlier this month from a reader who was very upset. The reader was asserting that a major company was broke and they would not be able to do anything in the Amiga market. When we attempted to tell him that this wasn't so and that there was more information available than he had, he responded, "I know more than you, because I read it on the internet."

The problem was not the reader's access to the information. The problem was the reader had no way to decipher what he had read. Everything on the net has the pretense of accuracy and we have been conditioned to accept everything we see in print as the truth (or close to it).

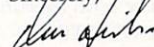
Fortunately, the internet is a great way for anyone to spread information quickly. Unfortunately, anyone can abuse it. An internet address is available to anyone with a credit card. No one assures the user names are accurate. One person can generate dozens of names. It is possible for an unscrupulous organization to arrange a series of identities on the net and then have them "correspond" with one another over the newsgroups about how great the organization's products are.

However, some of the larger problems occur when people unknowingly spread misinformation by not knowing all the facts or by not questioning the source of the material.

The internet is less like a superhighway and more like a subway. We travel down unknown corridors, following odd maps while reading the ads and graffiti that have been placed on the walls. Often we will make a change in a station and grab another connecting train without ever seeing where we are. There are some great stops on the lines, but, in the end, the subway is just a vehicle to get to our destination.

Just like the subway, we should always be a little suspicious about what we read on the net. We don't always know what hidden agendas are in play. The internet offers all of us a great deal more freedom, but with freedom there is always the need for responsibility.

Sincerely,



Don Hicks
Managing Editor

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EDITORIAL

Managing Editor: Don Hicks
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AMAZING AUTHORS

Keith Cameron Randy Finch
William Frawley Rob Hays
Jeff James John Steiner
Henning Vahlenkamp Dan Weiss
Doug Nakakihara Jason D'Aprile

1-508-678-4200, 1-800-345-3360,

FAX 1-508-675-6002

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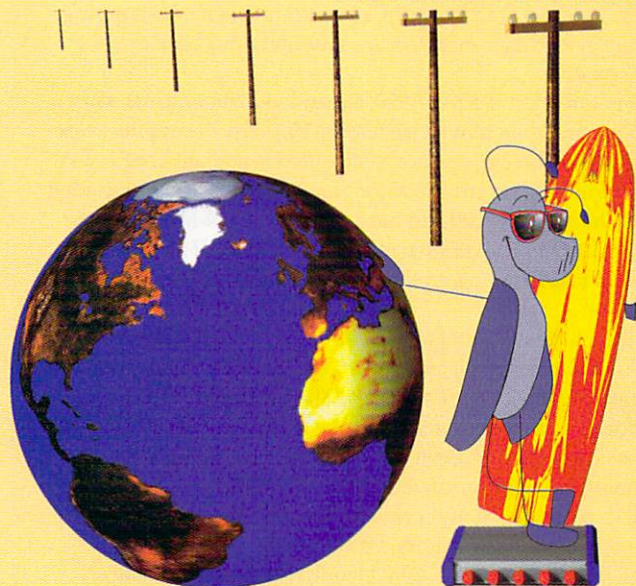
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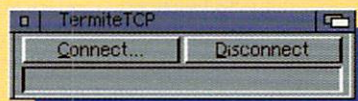
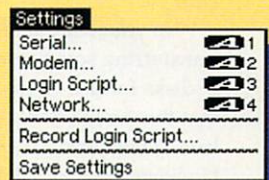
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Introducing TERMITE TCP

Finally, a TCP/IP Internet connection for your Amiga that doesn't take a Rocket Scientist to configure and use!



- Step 1: Call an Internet Service Provider (ISP) and obtain an Internet account
- Step 2: Enter your ISP info in Termite TCP's GUI, or choose "Record Logon Script" to have TTCP do it!
- Step 3: Click on "Connect"
- Yes, it really is that EASY!



- ☒ Easy to use GUI configuration and operation.
- ☒ Comprehensive printed manual.
- ☒ Includes beginners guide that takes the mystery out of the Internet
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- ☒ PPP support built directly in
- ☒ Supports multiple connections
- ☒ Easy to use graphical telnet and ftp clients supplied, more exciting clients in development
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Zip/Jaz Tools

Speaking of great things getting better. Squirrel Zip Tools now fully supports both the Zip and the new Iomega Jaz Drives! Upgrades are available.

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FEEDBACK

Dear AC,

In your May 1996 issue, Tony Bodo was asking about transferring some amateur radio programs from 5 1/4" to 3 1/2" disks for use on his Amiga 1200. In your response you stated that the Amiga never used 5 1/4" disks. This is not entirely true. There was a 5 1/4" disk drive available for the Amiga 500. I believe that it was labeled A1020 (due to a recent move, I am unable to locate my owner's manual to confirm this).

As I am still rather new to the Amiga, maybe the 5 1/4" drive for the A500 won't work on the A1200. If this is true, Tony could possibly find somebody with an A500 to copy the programs for him. A simple ~copy df(x):#? df0:~ should do the trick.

Your magazine is greatly appreciated by the Amiga users in the Michiana (South Bend, Mishawaka, Elkhart, Knox, Plymouth, Edwardsburg, Niles) (Indiana/Michigan) area. The news on the goings-on at Amiga Technologies is often discussed at our users group meetings. Thank you for helping us keep up to date on the issues that interest us.

Sincerely yours,
Bill Griffin

Thanks for the information. I thought the only 5 1/4 drive for the Amiga was used only with an IBM emulation package. I appreciate the correction. —ED.

Dear AC,

I would like to commend you and your editors and authors for keeping your fine magazine going during these enduring post Commodore days (years). I have recently re-started my subscription and look forward to receiving my first issue again. I try to read all I can about getting the most from my Amiga including most of the U.K. publications when I can find them. However, yours is by far the most professional and practical for those of us who use them for more than just

games. I support most of your advertisers when I'm shopping (usually every other month or so) and find your back issues a great resource.

I got my first A500 in 1990, expanded it about as far as I could go, and then moved up to an A1200 just as supplies were beginning to run out and have expanded it with all I need. I've since acquired a second A500 for next to nothing, and upgraded it with the M-Tec 68020 and hard drive, added 4 MB of RAM, and the 3.1 OS. The difference is unbelievable. If anyone still has an old A500 laying around, this sure breathes new life into it.

It's a little discouraging to look back a few years at your back issues and see the potential of the Amiga and now see it struggle to come back. I have used the other platforms (Mac/Windows) and still nothing beats the ease of use and efficiency of this system. I have been a loyal Amiga user since the beginning and will continue to until something else comes along that can knock my socks off like this one did.

Like many Amiga users, I use mine for many different things. Wordprocessing, DTP layout, design, advertising/forms/price lists etc. for my business, digitizing, home video editing, I haven't quite figured out MIDI yet, and the list goes on and on. Oh, yes of course, now I can fax thanks to my newly acquired GPFax program. (By the way, maybe someone there can tell me why I have such trouble getting GPFax to initialize my Practical Peripherals 14.4 Fax/Modem when I'm trying to send. Sometimes it takes 10 to 20 tries before it will initialize. I enjoyed your review on it but I didn't read any mention of problems like this.)

Anyway I thought you would like to hear from one of your readers. Keep up the good work and I especially like your new section on reviews geared towards business/application programs.

Sincerely,
Jim Lucia

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Dear AC,

With the latest upheaval in the world of Amiga I find myself very troubled with the 'new' owners of AT. I have postponed several major purchases for my machines pending the outcome of VIScorp's intentions. I'm holding off purchasing PowerAmiga accelerators (yes, Softwood, this means you!) for two machines, along with several software updates (Nova Design, Softwood) and new software purchases (Softlogic, Nova Design, NewTek). I cannot justify the expenses without any real confirmation that the Amiga computer will still be with us.

The information provided by VIScorp's own web page leaves me more worried than ever. Their mode of operations leaves much to be desired in my opinion. It seems that the two primary officers start a 'new tech' company and then keep it long enough to make a profit in a sale at a later date. They have done so at least once each on other startups they have overseen. What will keep them from doing so here? If we (user and third party developers) are to get assurances from VIScorp, I want some that are legal and binding. There should be something other than low level lip service the company is offering us.

What I would look for first in assurances from VIScorp that they are truly serious about the Amiga would be advertising. Not specialized market advertising but a general campaign to promote the Amiga as a serious home and business product. This advertising campaign must start soon and run long enough to make an impact on what is left of the current Amiga community. If you can't convince us we should stick with the Amiga who do you think VIScorp will be able to convince? And if VIScorp abandons the Amiga computer in favor of just using the technology you have at your disposal, how many Amiga users that are out there will use it, given that you abandoned them? I know I personally wouldn't get anywhere near any cable box from VIScorp.

I'm sure there are many other users who feel the same way. I encourage them to write to VIScorp or to the publication's Letters Editor that you are reading this in now and express your opinion. You may also send me email regarding what you have to say at the Cleveland Freenet. My email address is ac540@cleveland.freenet.edu or you may call the Cleveland Area Amiga User Group BBS at (216) 642-7865.

Carl Skala

Things continue to happen in the Amiga market. Please read the news article on page 48 of this issue.

As far as "assurances from VIScorp" that are "legal and binding," I am afraid you will not get them. VIScorp is a corporation in the middle of a very large transition. They need to be informed that the Amiga market can work if managed effectively, but I doubt if any of us can do more than offer support and information. —ED.

To the Managers and Amigans at VIScorp, and Amiga User Everywhere,

We, the members of The Cleveland Area Amiga Users Group, are interested in the plans of VIScorp for the Amiga. We have pledged support to the Amiga and have expressed that support by investing money and time in our machines. We still find the Amiga our choice of computer and look forward to the next generation of Amiga computers. The PowerAmiga is



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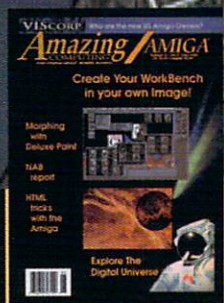
an example of a new generation that we would definitely be interested in purchasing.

Many professionals and enthusiasts make up our group. Two (and perhaps more) are well-known in the Amiga community. We all have an interest in seeing the Amiga continue and would support any company endeavour to continue producing the machines we love. In fact we are willing to offer our time in any way that would be helpful to you and your efforts to create the next generation as well as update current soft-and-hardware. We will share our next Journal, the Amiga-GURU that we have published for over ten years. In fact, last February was the tenth anniversary of our User Group.

We look forward to hearing about your plans for the future of the Amiga and hope that you include user groups, such as ours, in those plans. Our offer to help is no play; it is a serious commitment to continuing the only computer that created a community of users rather than just purchasers. We hope that other User Groups and you will join with us in renewing our community through a new generation of commitment, cooperation and soft/hardware.

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NEW PRODUCTS

and other neat stuff

A new section on graphics, GVP has a new home, Amicom introduces a new web installer, Blitz Basic is back, Paxtron has Amiga parts, and more.

Blitz Basic 2.1

Amicom Technology is the new official US distributor for Blitz Basic 2.1. This is the next generation of BASIC that incorporates the best features of C, PASCAL, and other programming languages. Extended WorkBench 2.0/3.0 support along with AGA palette control. Great for programming utilities or games. Producing 100% machine code, Blitz 2.1 can operate under Amiga OS or take over the Amiga in "Blitz-mode" for optimal performance. Free technical support for registered users when purchased from Amicom along with membership into Club Blitz.

Amicom World Wide Web Installer

Amicom Technology announced their new installer to help everyone get on the World Wide Web quickly and easily. The developers have promised, "Two months of development went into this product to assure its ease of use for even inexperienced Amiga users. Everything you need is right here with Amicom's WWW Installer!"

Amicom's WWW Installer includes trial versions of web browsers like IBrowse, AWeb, and AMosaic along with demos of AmiTCP and various other utilities. Amicom's WWW Installer also includes an Easy Install script for simple installation as

well as free technical support for registered users.

Amicom Technology encourages users to register for full versions of these programs, and the low \$39.95 suggested retail price for the installer scripts and manual should allow everyone to register the shareware versions.

SAFE HARBOR

Safe Harbor Computers has purchased the rights to distribute MacroSystem GmbH's line of Amiga products and upgrades for North and South America, effective immediately. Distribution was managed by DraCo Systems, Inc. (formerly NoahJI's), of Lafayette, Colorado. DraCo Systems shall continue to provide distribution and support for the DraCo line of nonlinear equipment from MacroSystem, GmbH.

The newly acquired product line includes many well-known products from MacroSystem including: the award-winning V-Lab Motion nonlinear video and audio editing card, Movie Shop editing software, the Retina 24-bit graphics card, V-Lab Y/C digitizing products, as well as the Tocatta 16-bit audio digitizer board.

Software Hut to Distribute GVP-M Product Line

Software Hut has announced that they are the US distributor for GVP-M. The most interesting and new product at this time is the new 060/50MHz board for the A4000 called T-Rex II. It has SCSI-2 controller and four 72 pin SIMM sockets (expandable to 128MBs). It also includes a one year warranty. The retail price is \$1299.00. This board is for A4000 desktops. There will be an A4000T version in two or three weeks as well as an A3000 and A3000T version coming soon.

Also available from GVP-M is an 060/50MHz accelerator for the A2000 series computers. This accelerator has the same features as the T-Rex II, but it also has four additional sockets for GVP custom RAM if a customer already has this. The RAM can be mixed and matched for optimum use.

GVP-M has also started shipping the proprietary 4MB and 16MB simms needed in some of their boards as well as the I/O extender with 1 high speed parallel and 2 high speed serial ports.

In addition, the DSS 8 plus Version 3 software upgrade for all DSS 8 owners is now shipping.

Software Hut is the official US distributor for all GVP-M products.

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GVP-M is a new company which bought the name, materials and rights from the old GVP company. Look for more products coming soon.

Software Hut Inc., 313 Henderson Drive, Sharon Hill PA 19079, Tel: 610-586-5701, Fax: 610-586-5706 or 610-586-6416, E-mail: softhut@ix.netcom.com, Web site: www.softhut.com

AMAZING SOFTWARE AND ACCESSORIES

Amazing Software and Accessories is a new Canadian distribution company which began its business January 1, 1996. "Our aim is to breathe new life into Amiga distribution in Canada," stated Wayne Parker, an established distributor and marketer in the PC market, one of the principles in the company. "We are using techniques that are common in the PC market, but because of the relatively small size of the Amiga market, have not been possible in the past," Parker added.

The company is the authorized Canadian Distributor for Newtek Inc., DKB, Quasar, Phase 5, Visual Inspirations, Amiga Technologies, Expansion Systems, Asimware, Macro Systems, GVP and others. Amazing Software can be reached in North America by calling 1-800-647-3315, or emailed at amazing@cyg.net.

Paxtron Corporation Purchases SMX's Inventory

Paxtron Corporation has announced that it has purchased the entire inventory of Amiga parts and chips from Service Management Group (SMG) of Columbia, Maryland on April 15, 1996. SMG, a previous U.S. distributor for Amiga Technologies, has elected to sell their parts inventory to Paxtron to focus on the main thrust of their business, complete Amiga systems. According to Paxtron officials, this acquisition puts Paxtron in a very strong position to be a major leader in supplying Amiga spare parts to the North American market. To handle their additional sales, they have added a new toll free line: 888-PAXTRON (888-729-8766).

Inquiries for Commodore/Amiga parts and chips should be directed to the Paxtron Corporation. They expect to direct their sales to dealers and service centers worldwide, with a new current price list available soon.

Paxtron Corporation, 28 Grove Street, Spring Valley, NY 10977, Tel 914-578-6522, Fax 914-624-3239.

Electrics Digital Designer

Chris Sterne has announced the existence of Electrics Digital Designer (Version 1.1), a commercial program he has written for the Amiga. Electrics is a program for designing and simulating digital electronic circuits. The circuit to be tested is drawn using simple and complex gates. Multiple logic levels and drive strengths permit realistic circuit behavior during simulation.

Some of Electrics Digital Designer's features include up to 99 schematic sheets per project, simple gates (NAND, XOR, etc.) and complex TTL gates (74193, 74245, etc.), simulation with waveform recording (Single and Bus signals), and ARexx support for simulation scripts allows complex sequencing. Electrics comes with illustrated AmigaGuide® instructions, and requires Workbench 2.0 or greater.

To obtain the program for \$30 US (plus \$2 shipping and handling), contact Chris Sterne at 1111 West 7th Ave, Vancouver, British Columbia, Canada V6H 1B5. He can also be called at 604-733-6972 or emailed at SERR3414@BCIT.BC.CA.

DJHelper Two

Creative Focus has announced the release of a brand new DeskJet printer driver software for the Amiga, DJHelper Two. DJHelper Two combines a state-of-the-art printer driver with a specially designed user interface, enabling you to realize all the advanced capabilities of your DeskJet.

DJHelper Two includes four fully integrated modules covering every aspect of your printing needs. You can also control tabsize and timeouts, set critical printer parameters, and use different configuration files for different printing tasks. DJHelper Two is compatible with all Amigas and any version of the OS from 1.3 through 3.1.

DJHelper Two has been designed for all DeskJets, from the original to the new 600 and 800 series models, and prints up to 600x600 DPI. Suggested retail price for DJHelper Two is \$85. Creative Focus can be contacted at Box 580, Chenago Bridge, NY 13745-0580. Creative Focus can also be contacted via email at ghull@bix.com.

CONTRAPTION INDUSTRIES

Contraption Industries has announced the release of the Contraption Industries Audio Expander, an 8-bit enhancement system that is designed for use with a high quality amplified stereo system. It is also possible to connect the expander directly to your monitor speakers or small desk top speakers.

The Audio Expander can be installed in minutes and requires no tools. For more information regarding this product, you can call Contraption Industries at 813-355-6121, or you may also write to Contraption Industries, 1851 University Parkway, Sarasota, FL 34243.

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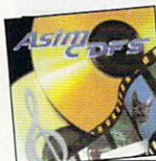
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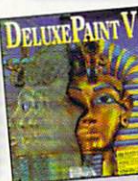
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R. Shamms Mortier

Lyap2DEM

The article, Fun with Lyapunovs on page 18 of this issue, which centered upon Lyapunov to DEM conversions has more news centered around it. Clint Woeltgen, the author of this Vista Pro utility, is planning an upgrade to it (no date set yet) that will address both a review and alterations of the interface and some additional new features. Look for it sometime in the Fall. Although Virtual Reality labs, the place where Clint works, is devoted to other platforms more than to the Amiga at this juncture, Clint likes to "keep his hand in Amiga programming". His company, Chaocity, has taken over development and marketing of VRLI's Amiga software. Watch for an upgraded version of Lyap2DEM in the coming months, with its possible inclusion on the Vista Pro 3.5 CD-ROM.

Nerveware

Nerveware's latest is the Deluxe MIDI Converter, a DMusic 2.0 utility plugin. Since DMusic doesn't boast the capability to write standard MIDI files, Nick Didovsky of Nerveware wrote this application that converts DMusic files into format 1 MIDI files.

Deluxe MIDI Converter allows you to export MIDI files to Bars and

Pipes and KCS on the Amiga, as well as Vision, Cakewalk, and Metro on the Mac and Windows platforms. Deluxe MIDI Converter also reportedly works great with Finale for professional music publishing. Contact Nerveware at: (212) 369-1733, (212) 996-4214 (fax), or 72250.3313@compuserve.com

Help Call-

As I said in an article a few Amazing issues ago, when talking about my studio, I have plans to network my Mac to my Amiga chain. I haven't done it yet, however. I received a letter from Jim Crabtree of Crabtree Photo and Video in which he states that his needs are more pressing, and he needs to create a Mac-Amiga LAN now. My only advice at this point was to steer him to Alan Brooks, the Amiga network king. Anyone with other possible suggestions for Jim, call him at 301-334-3344, or e-mail at jcrabtree@mail.miworld.net.

Acting on Impulse-

The 4.0 Imagine release has added two new features. Though that might seem like a smallish upgrade, the features include full ARexx support! ARexx scripting can open Imagine to thousands of new effects and possibilities, so this is no small matter. The other new feature is the addition of CyberGraphics support, for their line of hardware. We hope to do a full review, and even a few tutorials, of Imagine in the coming Amazing issues, so stay tuned. Contact Impulse at their Web site: <http://www.coolfun.com>.

Cinema4D

The final version of MagicLink, the 3D format translation module for Oregon Research's Cinema 4D software, is available. If you own Cinema4D and haven't been sent this module, call Oregon Research and request it. With MagicLink, you can translate Caligari, DXF, Fastray, Imagine, Silver, LightWave, Cinema4D, PageRender, Reflections, Sculpt, and VideoScape 3D object files



Figure Cin4D. From top to bottom you can see the progression of a Cinema4D file translated to the LightWave format and rendered. The LightWave rendering was resized first.

to Caligari, DXF, Fastray, Imagine, Silver, LightWave, Cinema4D, PageRender, Real3D, Reflections, Sculpt, and VideoScape formats. The operation is quick and simple, and includes a 3D object viewer so that you can see the object from any angle before you translate it.

•AC•

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NON-LINEAR VIDEO ON A BUDGET: V-LAB MOTION & MOVIESHOP 3.2

Can't afford the high priced video systems for non-linear editing? The answer may be the V-Lab Motion and its new MovieShop 3.2 software.

By John P. Jackman

If you work in the video world, you know that everything is now suddenly digital. Non-linear Editing (NLE) is the buzzword of the industry, the Hot New Thing. But what if you can't afford \$40,000 for an Avid or even \$16,000 for a full-blown Toaster Flyer? The answer is the V-Lab Motion and its new MovieShop 3.2 software from MacroSystem GmbH in Germany, now distributed in the US by Safe Harbor Computers in Waukesha, WI.

The V-Lab Motion is not exactly new hardware; in fact, it has been on

the market for almost two years, making it a veteran in the rapidly-changing world of NLE. What is new is the software. MovieShop 3.2 is the capture and editing software for both the V-Lab and its (sort-of) Amiga-clone big brother, the DraCo.

The two year history of the V-Lab has been a chance for the software to mature, for bugs to be shaken out, and for new features to be included. If you saw the early 1.xx versions of MovieShop, you owe it to yourself to look at how far this baby has come.

MovieShop

MovieShop is in some ways similar to every other NLE interface: there is a graphical timeline, you drag digitized clips in order, you add transitions. But MovieShop is different from many others in its almost unlimited video compositing, and in its ability to combine transitions. It is technically possible to layer 125 layers of video with 75 or 80 "sandwiched" effects controlling motion, alpha, and other aspects of each layer, while also mixing down 99 different audio streams.

Opposite: An actual frame of video output from the timeline shown in Figure 2. The backdrop is a blue texture composited with live video. Three video clips are scaled and tilted, an alpha drop shadow added, and composited over the backdrop. Each moves at a different rate, and can be moved in apparent 3D space through scaling controls.

Of course, just because it's technically possible doesn't mean that you ought to try it! However, the additive power of combined transitions and multi-layer compositing means that MovieShop can easily achieve effects usually only possible with high-end video software such as Adobe AfterEffects.

Using MovieShop is quite straightforward. To digitize video, you simply click on the "RECORD" gadget of the Scene control window. A new unnamed scene is created in the scene list; the user can then name the scene and type in a brief descriptive note. Clips can be trimmed in the Scene window. Audio can be digitized or imported.

When all the video and audio clips are digitized, the actual timeline editing can be performed in two ways. In "Easy Mode," the timeline operates much like the PC/Mac staple, Adobe Premiere (See Figure 1). There are two video lines; a video clip is dragged into the Timeline and added to one of the video lines. Clips can be assembled in any order. A variety of transitions (wipes, dissolves) can be added between clips and simple titles added. All transitions or effects must be rendered; straight cuts are played back in real time, with no rendering. Audio levels for each clip can be controlled quite precisely with an editable "envelope."

It is in the more complex "RPN Mode" that the real power of MovieShop becomes available. "RPN" stands for "Reverse Polish Notation," which describes how operators will work in a complex stack. Don't let the obscure term put you off, it is not difficult to learn. In RPN Mode, the user has access to virtually unlimited

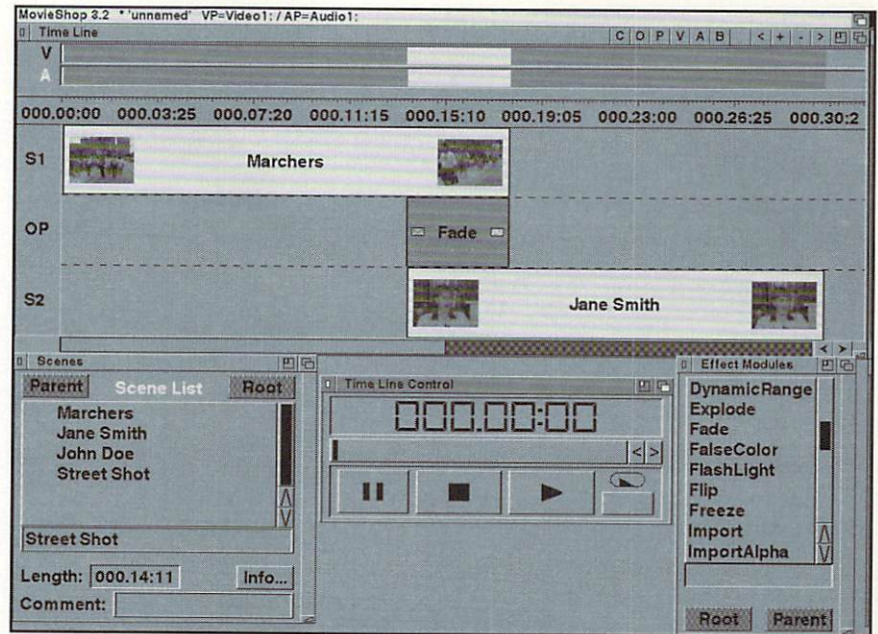


Figure 1: MovieShop 3.2 "Simple Mode" editing. Timeline displays two video lines with an effect line in between. Video clips are dragged into one or the other line; effects are placed between clips. Complex composite effects cannot be used in Simple Mode.

video and audio lines, and can combine various effects or transitions in complex ways (See Figure 2).

For example, the user can combine "Trapezoid," "Scale," and "Compose" to have a new scene "fly in" as a 3D plane. Complex alpha wipes can be created quite simply and even layered.

of available transitions is potentially unlimited.

In addition to the stock effects and transitions, two add-on disks are available which include an additional titling operator, complex wipes such as "Bars" and "Circle Wipe" and several very nice 3D operators, "Cube,"

Multiple frames can be exported to external programs such as Image FX, Imagine, Lightwave, or Adorage, and complex 3D transitions created.

Multiple video streams can be used; you can have ten or twenty scaled-down clips floating in apparent 3D space, travelling across the screen, and all playing full-motion video. Each clip can display independent effects and transitions, too! (As in the illustration on the top of page 14.)

Multiple frames can be exported to external programs such as Image FX, Imagine, Lightwave, or Adorage, and complex 3D transitions created. The resulting 3D frames are then reimported to MovieShop and then composited with the next scene (See Figure 4). This means that the palette

Pyramid," and "T3D2." Cube and Pyramid are 3D objects which can display three different video streams on different faces, and which can be rotated and moved entirely under the user's control.

The obscurely-named T3D2 acts somewhat like the DPaint "Move" requester, allowing the user to type in coordinates for axis changes in 3D space. Unfortunately, the current implementation of T3D2 is somewhat buggy, and the interaction of various settings can produce unpredictable results. Fortunately, MovieShop 3.2 now includes a "Preview" window

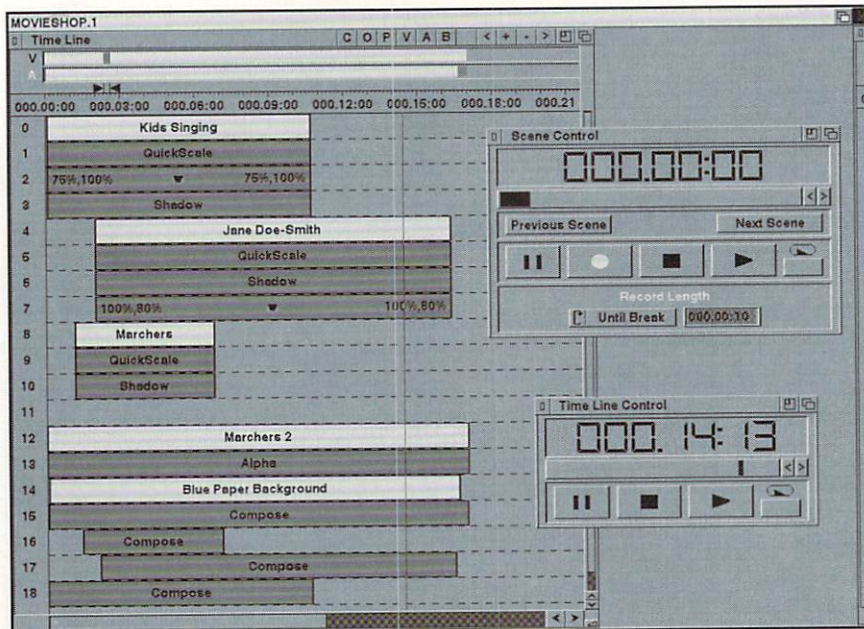


Figure 2: MovieShop 3.2 "RPN Mode" editing. Timeline displays a virtually infinite number of lines. An unlimited number of video layers, effects, and audio layers can be assembled. In this example, a backdrop of live video composited with a static texture is created, and three video clips are "flown" in apparent 3D space across the backdrop at different speeds.

which will quickly render a tiny version of your effect. Older versions required you to render the full-scale effect to see how it would look.

A powerful, yet poorly documented, feature of MovieShop is "scene grouping," which is essentially a hierarchical organization of video clips into subdirectories. Most NLE software allows some version of sorting related scenes into folders or directories; but in MovieShop, these groupings can play back as a rough edit without rendering. Try that in Premiere!

Simply dragging scene names up or down in the scene or group can create a virtual rough edit of that section for a client to view. Changes are easily made in this "virtual rough" before any work is done in the timeline, or any time spent rendering effects. Each group can be dragged to the timeline as a whole, and effects added between groups.

Of course, the V-Lab can also be used as an excellent animation recorder by importing animation frames to the video partition. Since MovieShop is fully ARexx compatible, frames can be automatically imported from LightWave, Imagine, or other 3D

software as they are rendered. The original frames can then be deleted to save disk space. The video output is better than the DPS Personal Animation Recorder, which uses the slower IDE drive specification.

V-Lab

The V-Lab is a Zorro-II board that plugs into any Amiga 2000, 3000, or 4000. The software requires WB 2.x or higher, a 68020 processor or better, and a minimum of 8MB of RAM. The rule of thumb for all digital video is to get the fastest processor you can, with as much memory as you can afford!

Although it is possible to use IDE hard drives with the V-Lab, they will only work at very low quality. You really need a good SCSI or SCSI-II video drive optimized for AV transfer. I tested the system with a 4 gig Quantum Atlas, which worked like a champ.

The Amiga 3000 SCSI controller performs very well with the V-Lab, as does the Warp Engine's controller. There are known conflicts with GVP controllers. The V-Lab is designed to work with MacroSystem's Toccata audio card for full audio/video capture and playback. The Toccata is

also a Zorro-II card; both are easy to install. Like most digital editing cards, the V-Lab uses Motion-JPEG (M-JPEG) compression to squeeze the huge amounts of video data down to a size that can be managed by both the hard drive and the Zorro-II bus.

The board uses the Philips M-JPEG chipset, as do the majority of M-JPEG boards on all platforms. The compressed JPEG files are stored on a proprietary video partition, which is not accessible to AmigaDOS. Audio files are stored on a normal Amiga partition.

The size of the JPEG images (and the resulting quality) is set by a quality percentage. Each project can only use one quality setting throughout. Most users seem to be able to use 70%-75% JPEG quality. This translates into a data transfer rate of about 1.8 Megs/sec, or a compression ratio of about 12:1. With audio, this is close to the 2.5 meg/sec limit of the Zorro-II bus.

There is some JPEG artifacting visible at this compression ratio, although it is minimal in normal video. The picture quality at this data rate is much better than similar boards I have tested, which displayed a more prominent "peggishness" at 12:1. Picture quality is comparable to the Macintosh-based Avid Media Composer running at AVR-24 quality. Artifacting is most visible around composited titles and other sharp, high-contrast objects. These produce a "JPEG mesh" that is noticeable while editing, but is less noticeable on VHS copies.

The V-Lab input does not require a time-base corrector, but I found much improved quality when I used one with S-VHS or Hi-8 tape. DVC video needs no time base correction.

Weaknesses

MovieShop 3.2 fixes many of the weaknesses in the earlier software, but several areas remain to be addressed. The titling module is truly inferior, and most V-Lab users create titles in other programs for import. MovieShop 3.2 displays "stamps," (small thumbnails of beginning and

ending frames) on the timeline. However, the software will not run in 256-color mode. I was unable to run MovieShop 3.2 in any mode over 16-level grayscale. The stamps feature is less than useful in plain black & white.

The "Preview" window is not yet perfect; some effects do not display correctly. The proprietary video partition continues to be inaccessible to AmigaDOS, so video frames must be manually exported to apply effects from other programs.

The Toccata audio board, though technologically sound, is expensive and getting a bit long in the tooth. The audio card's Samplitude software (which you do not have to use with the V-Lab) is both odd and somewhat limited. And there is a continuing bug which can create an irritating "click" in audio transitions. While there is a simple workaround, it's about time to fix this!

The primary weakness of the video hardware, which will not be fixed, is the use of the restrictive 16 bit Zorro-II bus. According to Joerg Sprave, manager of MacroSystem, plans to develop a Zorro-III version of V-Lab have been completely dropped. All their hardware development efforts will now be focussed on the V-Lab's "big brother," the DraCo.

V-Lab Future

So what does the future hold for V-Lab users? Some pluses and some minuses. MacroSystem seems resolute in their refusal to produce an Amiga-based 32 bit V-Lab, so current users are stuck with the low data rate of the present version. DraCo Systems US (formerly Noahji's) has dropped the Amiga product altogether to focus on selling the DraCo.

But on the plus side, the US distribution has been taken over by Safe Harbor, a strong backer of the Amiga. And while a Z-III V-Lab seems unlikely, the door is not closed on Amiga accelerators which will incorporate the proprietary 32-bit DraCo bus. This would allow existing Amigas to use the faster DraCo version of the V-Lab, which can transfer about 6 megs/sec.

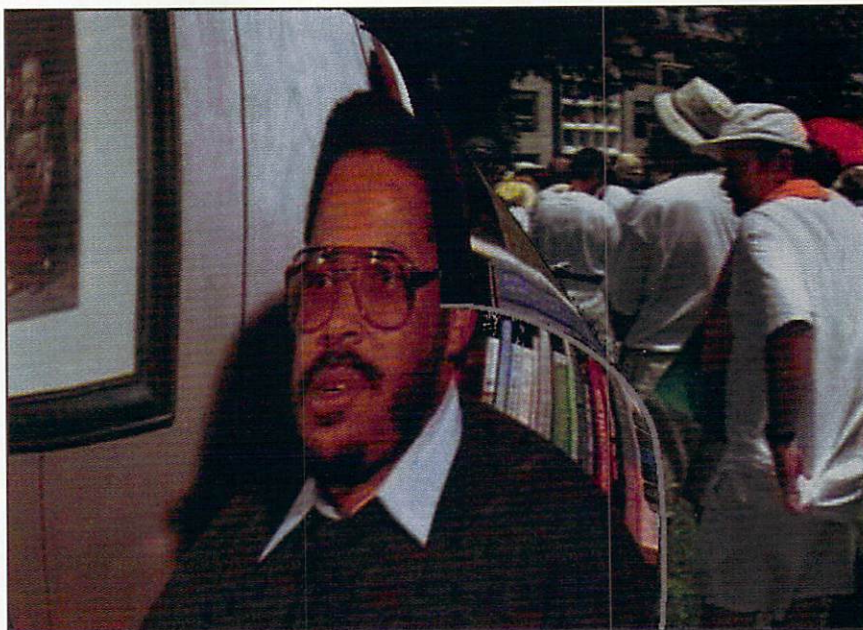


Figure 4: A 3D page turn created in Imagine 4.0. The last frame of Scene 1 was exported to Imagine, and the page turn rendered. The resulting frames were reimported to MovieShop and composited with the opening frames of Scene 2.

Amiga 2000 owners will be first in line, since MacroSystem is close to releasing the Paladin board, an '030 40-mhz accelerator which includes the proprietary DraCo bus. MacroSystem does not currently plan to develop a similar '060 board for the A-3000 and A-4000, but they would be open to cooperating with a third party manufacturer on the project. MacroSystem will continue to produce the current Amiga V-Lab, and Joerg Sprave states emphatically that they will develop for the Amiga when there is a new Amiga — but not before.

The immediate future is better on the software front, since development of MovieShop is continuing at a furious pace. Because the V-Lab uses the same software as the DraCo, there will be an ongoing "trickle-down" effect.

MovieShop 4.0 will be out later this year, including a number of new features. A handler allowing AmigaDOS access to the video partition is also promised; this would allow ARexx use of powerful programs such as ImageFX from within MovieShop.

Of special note is the impending release of a V-Lab version of Monument Designer, a powerful title generation and animation package,

from ProDAD in Germany. This will operate transparently from within MovieShop, vastly improving the currently weak titling capabilities. Also, an optional time code board will be released soon; this will be a Zorro II board which will work in both the Amiga and the DraCo.

All in all, the V-Lab Motion represents a solid value for Amiga owners who wish to enter the brave new world of non-linear editing. Though the system has its weaknesses, it has significant strengths over comparably-priced boards for other platforms. These derive in great degree from the video-friendly Amiga operating system and architecture. The fact that software development is actively continuing is a bright spot.

The V-Lab Motion will not take you into the broadcast arena, but it provides excellent quality for those whose primary end market is VHS tape distribution or local cable. And let's face it, that's what most video producers actually do!

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•AC•



by R. Shamms Mortier

Lyapunovs are not some distant relation of the Munchkins of *The Wizard of Oz* or the LumpaLumpas in *Charley Wonka and The Chocolate Factory*. Lyapunovs are a class of fractal associated algorithms. They are used to visualize a specific condition of fractal space.

Lyapun2DEM explores the curious chaotic graphics of Lyapunov space. What the program does is mathematically straightforward—it translates Lyapunov graphics into DEM files for Vista Pro rendering. DEMs (Digital Elevation Maps) are used by Vista Pro and other scenery generators to form 3D environmental terrain models. The Amiga has always had superlative

DEM generators, software like Vista Pro, Scenery Animator, Panorama, and World Construction Set. Scenery Animator reads Vista Pro DEMs, making them kissing DEM cousins. For that reason, we will use both of these applications in this article to focus upon creating some interesting Lyapunov graphics.

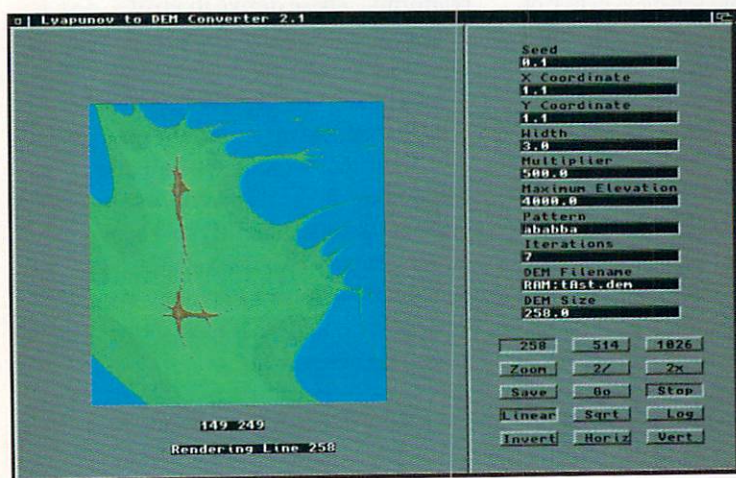


Figure 1. The Lyapun2DEM interface is a study in simplicity, but don't let its balanced design fool you. Infinite variety is possible here. Notice the generated Lyapunov topographical rendering generated on the left.

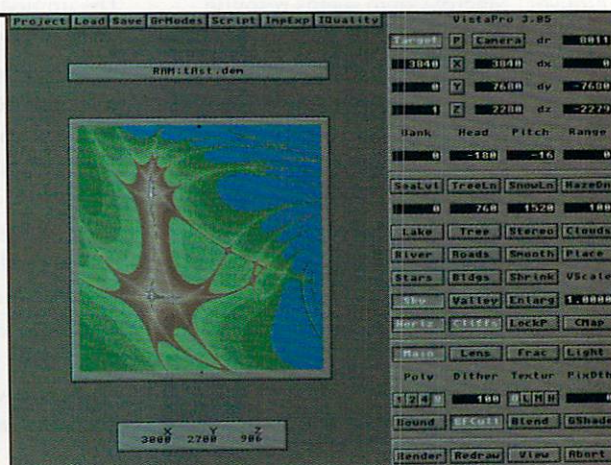


Figure 2. Vista Pro takes the DEM file created in Lyapun2DEM and allows you to alter it much further, on its way to a scenic rendering.

Figure 2B. Be very careful at what height you place your Vista Pro camera. Strange results, like those shown here, can arise when it is placed under the ground.

Lyap2DEM was originally just Lyap, which was included with the TerraForm disk, a utility to Vista Pro. The application was written by Clint H. Woeltjen, one of the original founders of Virtual Reality Labs, Inc. His email address is 75300.3706@compuserve.com. Chaocity, Clint Woeltjen's company, has taken over development and marketing of Virtual Reality Labs' Amiga software. Lyap2DEM was released as public domain several years ago (1991 or 1992), and Clint posted it on CompuServe. I got it from the BBS of Visual Inspirations (813-935-6573) some months ago.

Interface

The interface for Lyap2DEM contains a number of input areas, each of which has an effect upon the topographic Lyapunov map rendering. There is no way, however, to tell you exactly what you are going to get. If you want to truly master this program, be prepared to spend a good portion of your life doing it, while you fill up thousands of pages of reference notebooks in the process. A near infinite variety of possibilities exists here. You can, however, learn a bit about what placing certain string configurations in the input areas means, and some degree of familiarity with visual expectations can be gathered by noticing how certain strings effect the graphic outcome.

Interface Controls

The controls for Lyap2DEM are split into two types: input strings that are typed in and buttons that can be toggled on or off. The input strings are defined as follows:

Seed: Any number between zero and one.

X/Y Coordinates: the left most and bottom most values in the graphic window, in pixels (default is 1 and 1).



Figure 3. I appreciate the Scenery Animator interface. It has two screens for displaying both the camera view and the topological map. Controls are present on each screen.

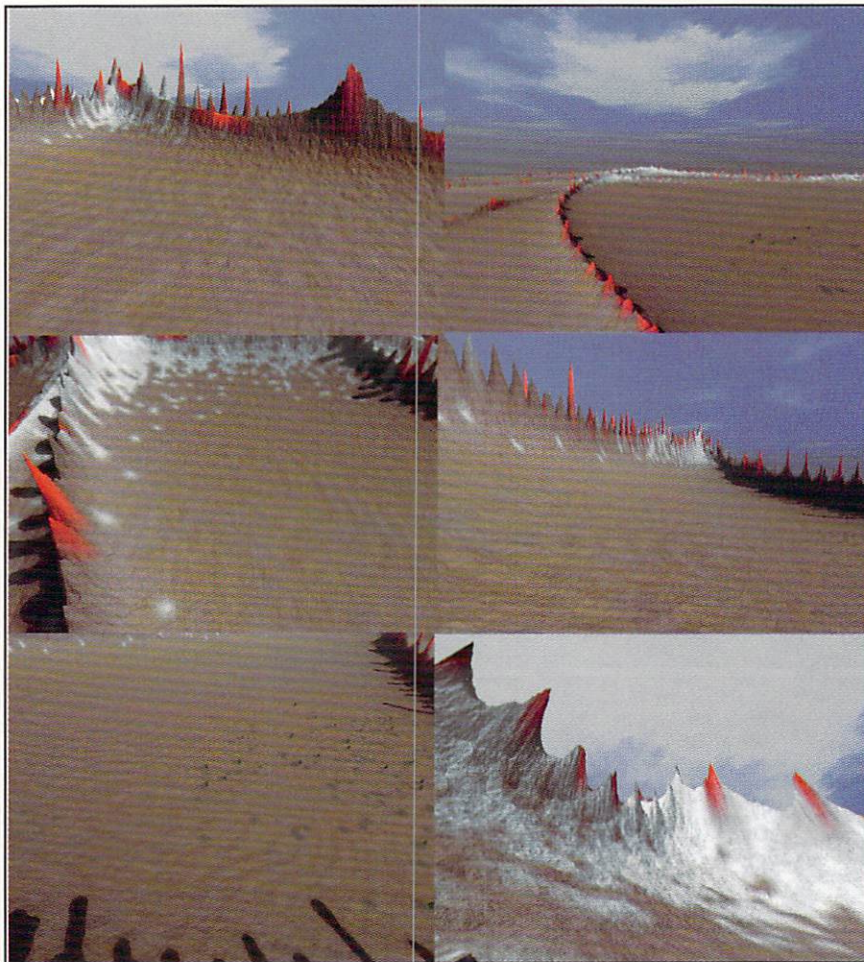


Figure 4. All of these renderings were generated in Vista Pro using the same data set. What was changed were the camera angles and some of the terrain settings (snow and other environmental features).

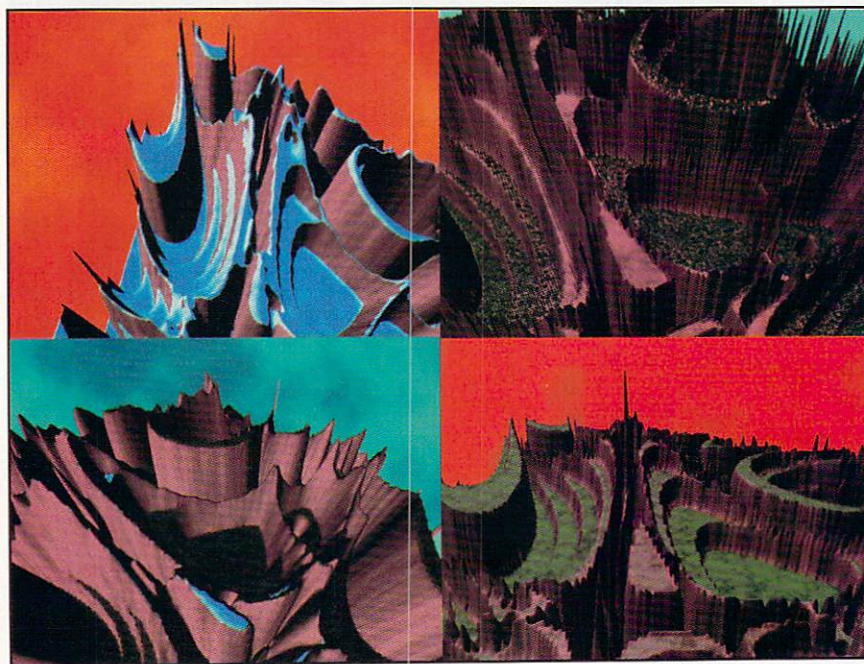


Figure 5. The exact same data set in Figure 4 was used to create these results in Scenery Animator. I used SA's internal environmental controls to alter some of the parameters. Observe the startling variety between Figure 4 and 5.

Width: The incremented difference between X and Y.

Multiplier: A number that effects the overall elevation of the graphic.

Maximum Elevation: The maximum elevation that the graphic can attain (as units of height).

Pattern: This is the tricky one. The actual idea for this algorithm, the generating formula that produces the final Lyapunov graphic, was something the author admits getting from an article in Scientific American ("Computer Recreations", September 1991). This is a series of letters representing mathematical functions, the heart of the Lyap2DEM engine. However, where the Scientific American article used only two letters (A and B) to represent the generating functions, the author pushes the functions to the limit, allowing functions from A to Z. Here is what the letters represent:

'a': $z = (y * z) * (1.0 - z);$

'b': $z = (x * z) * (1.0 - z);$

'c': $z = (y * z) * (1.0 - z * z);$

'd': $z = (x * z) * (1.0 - z * z);$

'e': $z = (y * z) * (1.0 - \sqrt{z});$

'f': $z = (x * z) * (1.0 - \sqrt{z});$

'g': $z = (y * z) * (1.0 - \sin(z));$

'h': $z = (x * z) * (1.0 - \sin(z));$

'i': $z = (y * z) * (1.0 - \cos(z));$

'j': $z = (x * z) * (1.0 - \cos(z));$

'k': $z = (y * z) * (1.0 - z * z * z);$

'l': $z = (x * z) * (1.0 - z * z * z);$

'm': $z = (y * z) * (1.0 - \sqrt{z * z * z});$

'n': $z = (x * z) * (1.0 - \sqrt{z * z * z});$

'o': $z = (y * z) * (1.0 - \sin(z * z));$

'p': $z = (x * z) * (1.0 - \sin(z * z));$

'q': $z = (y * z) * (1.0 - \cos(z * z));$

'r': $z = (x * z) * (1.0 - \cos(z * z));$

's': $z = (y * z) * (1.0 - \sin(z * z * z));$

't': $z = (x * z) * (1.0 - \sin(z * z * z));$

'u': $z = (y * z) * (1.0 - \cos(z * z * z));$

'v': $z = (x * z) * (1.0 - \cos(z * z * z));$

'w': $z = (y * z) * (1.0 - \sin(\sqrt{z * z * z}));$

'x': $z = (x * z) * (1.0 - \sin(\sqrt{z * z * z}));$

'y': $z = (y * z) * (1.0 - \cos(\sqrt{z * z * z}));$

'z': $z = (x * z) * (1.0 - \cos(\sqrt{z * z * z}));$

Iterations: The number of iterations to use each pass. Each letter is considered one iteration.

DEM Filename: The name of the DEM file that will be saved with the "Save" function.

DEM Size: The number of data points used for the width and height of the DEM.

The Buttons-

258, 514, 1026: Buttons to set the standard widths of commonly used DEM's (I would suggest keeping the sizes of your Lyaps to 258 or 514 to minimize rendering times).

Zoom: Creates a rubber band box for enclosing the area you want to render in greater detail.

2/: Multiplies the width by 2. Like doubling your distance above the landscape.

2x: Divides the width by 2. Zoom 2x function.

Save: Save the currently rendered DEM as the filename in DEM Filename (I found it best to render to RAM, and then move the files where I wanted them afterwards).

Go: Start rendering a Lyapunov using the parameters above.

Stop: Stop rendering at the end of the current line.

Linear: Use the iteration values as they come out of the function.

Sqrt: Use the square root of the iteration values.

Log: Use the log of the iteration values.

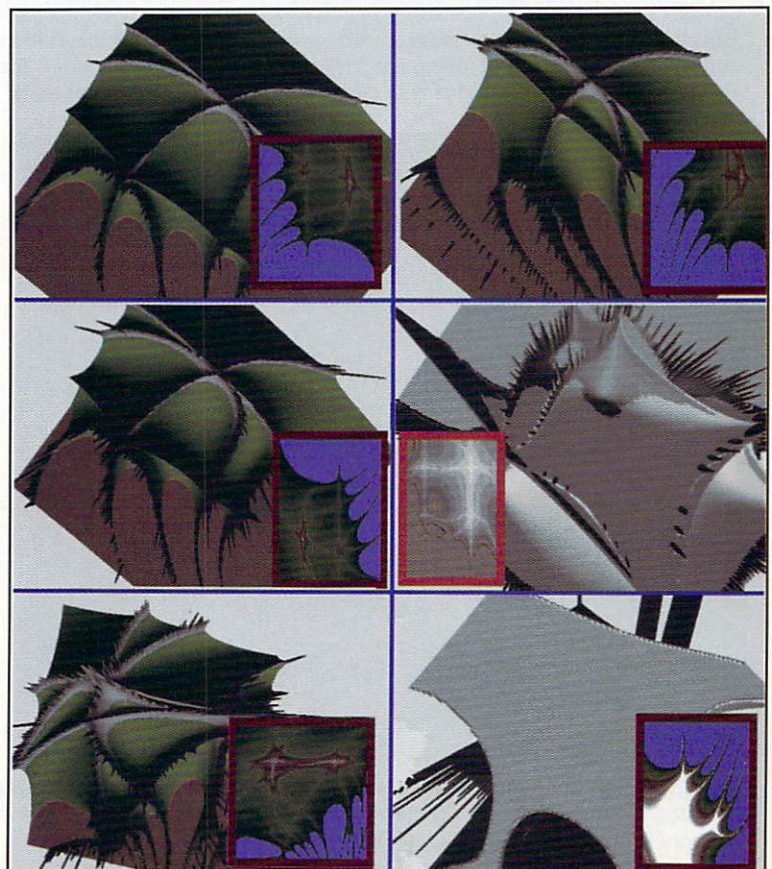
Invert: Use Max Elevation for the sea level, and decrease elevations as the iteration values increase.

Horiz: Flip the landscape along the horizontal axis. Requires re-rendering.

Vert: Flip the landscape along the vertical axis. Requires re-rendering.

(The Horiz and Vert functions can be used to build mirror DEM's that can be loaded in as pieces of a larger DEM in VistaPro 2.0.)

Figure 6. The inset graphics in each of these six views represent the original Lyapunov topography, while the larger graphics are generated results from these different data sets using Scenery Animator. You can begin to see how the data translates into specific scenery information by carefully studying the relationships of color and form between the two.



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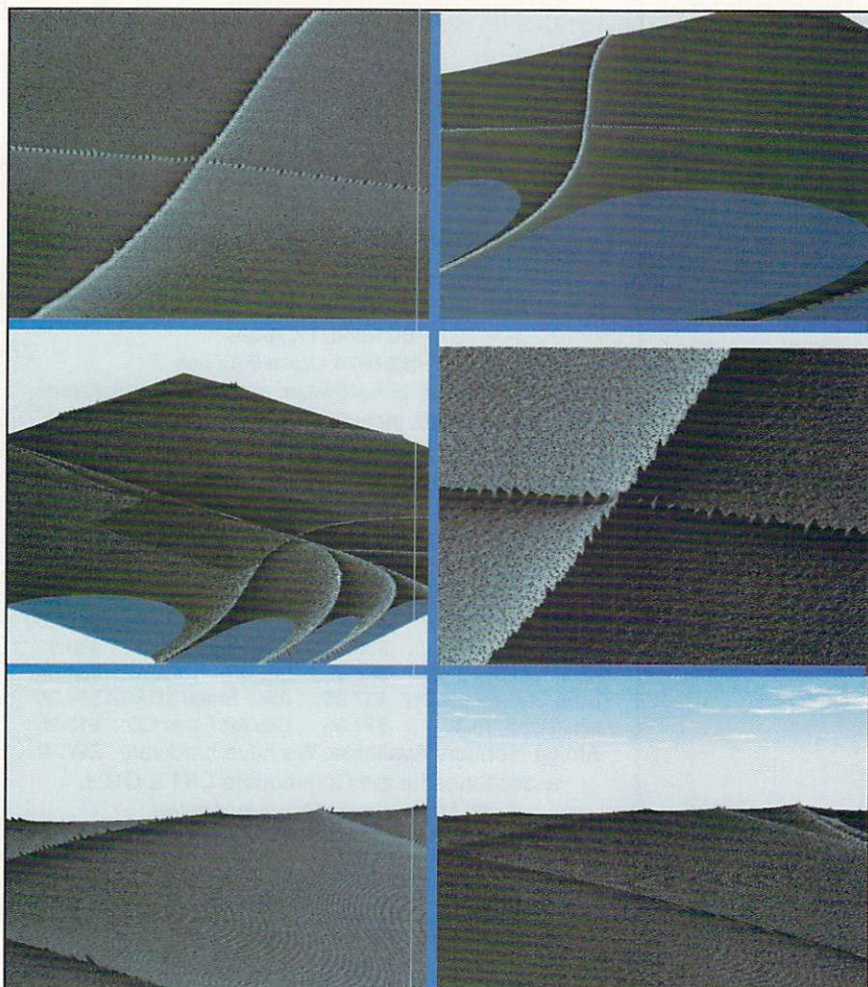


Figure 7. A large Lyapunov data set was used to create these views in Scenery Animator. Reminds me of rolling meadows separated by stone walls. The truth is, the greenery isn't grass, but a very high view of Scenery Animator trees!

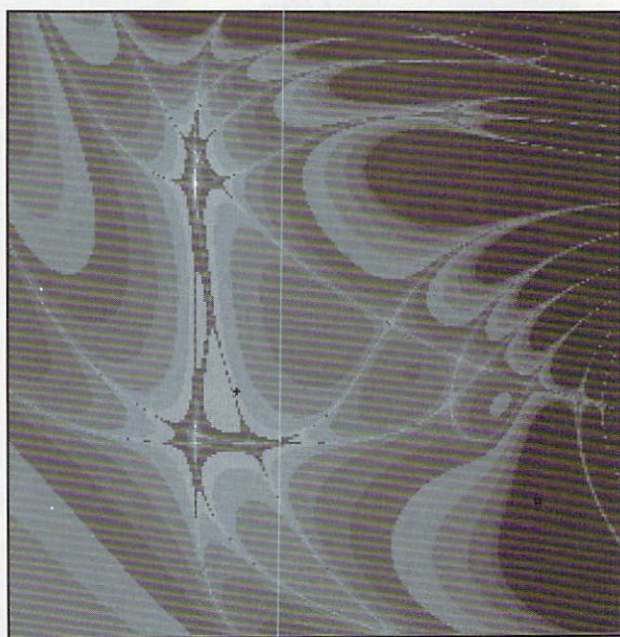


Figure 7. A large Lyapunov data set was used to create these views in Scenery Animator. reminds me of rolling meadows separated by stone walls. The truth is, the greenery isn't grass, but a very high view of Scenery Animator trees!

Renderers

Since the application was designed to work with Vista Pro, you might assume that Vista Pro was used to produce all of the graphics accompanying this article. Wrong assumption. What I discovered is that the same DEM data renders quite differently in Vista Pro as compared to Scenery Animator. In addition to that, each program has a long list of controllers that add water, trees, vegetation, cliffs, sky and other features to the same data set. Meaning that a single data set can be used to create literally thousands of different environments. Add to this the possibility of creating limitless Lyapunov based topographical DEM files, and you can understand why it might be possible to spend the balance of your existence on the planet exploring just this one computer graphics involvement!

By using Nova Design's ImageFX, grayscale maps can be created from the Lyaps. These grayscales can be used as bump maps in 3D renderers, or can function as input graphics for Megagem's Scapemaker software (see my piece on Scapemaker in the March issue of *Amazing Computing*).

You could also paint other shapes on the grayscale map, and use that to create yet another limitless number of interesting DEMs. For those of you running a Mac or PC in addition to your Amiga, Scenery Animator is also Mac specific and Vista Pro runs under both Windows and the Mac/PowerMac. Just as a benchmark speed test, I ran both programs on all three platforms. Here, amazingly enough, is what I found.

Slowest renders by far were generated by Vista Pro on the Amiga, against a 75Mhz Pentium and a 100Mhz PowerMac. Next slowest was the Vista Pro renders on the Pentium, then Vista Pro on the PowerMac. Second fastest renders were accomplished by Scenery Animator on the PowerMac, and fastest renders (fanfare please!) were attained on the Amiga (33Mhz) with Scenery Animator.

The speed differences between the Amiga and PowerMac versions of



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Amazing Symmetry

Textured Tiles are extremely easy to create and offer the digital artist a few very interesting opportunities.



As this Aladdin-4D rendering demonstrates, a limited number of textures can produce maximum variety, depending upon the shape of the object and how the texture is mapped (spherical, cubic, planar, etc.). All of the textures shown here were produced with the method described in the article.

by R. Shamms Mortier

If you are a computer artist or animator, or aspire to wear either or both titles, there is one collection of artifacts that you will never have enough of—textures. The search for newer and unique textures is a never ending obsession, fraught with obscure searches on the internet, the maddening browsing of hundreds of CD-ROM texture libraries, and the exploration of every tool possible that holds any hope of creating a never-before-seen texture look. To help you get some rest on the one hand, and to light your passionate fires for graphics heaven on the other, we will explore the usage of a simple tool, a tool embedded in a piece of software that most if not all Amiga users have in their library: DPaint. DPaint V was used as an example for this article, but any DPaint version will do. The tool we're talking about is the Symmetry tool, evoked by the icon that looks like a four-petal flower in the DPaint ToolBox. It's two tool spaces above the "CLR" tool on the right.

Before we suggest a few ways about how to use this tool, we should mention that there is one other item you'll need for this tutorial—pictures. These can be either digitized photos or CG paintings. The photos used in the accompanying graphic examples were taken with a Kodak DC-40 still-video camera. The DC-40 holds 48 pictures, and any digitizer (like the Toaster, the DCTV box, or another suitable frame grabber) can be used to port the pictures from the camera to your Amiga hard disk.

You can also use any pictures already saved to disk, or choose some from a CD-ROM photo collection. No matter what the source of the graphics, the technique described here is guaranteed to give you amazing results.

First, open up DPaint, and load one of your chosen graphics to the screen. It's best to work in HAM8 or 256 color mode if you have an AGA machine. More hardware endowed users can select to use DPaint with their 24-bit framebuffers. If you have an earlier Amiga, work in the highest color mode possible to appreciate the results. We're going to use the DPaint Symmetry tool to create some fancy tiled artwork.

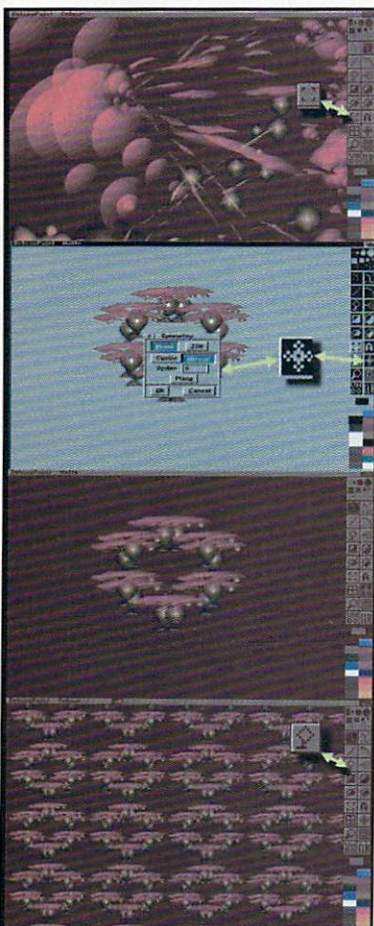


Figure 1. From Top to Bottom, these four DPaint screenshots represent the Symmetry tile creation process. First, a suitable graphic is selected, and an interesting brush is cut out of its surface. Next, the Symmetry tool is configured. Third, a symmetrical tiling is created and painted down. Last, the Paint Bucket tool is used to fill the screen with the newly created brush.

Figures 2 to 5. Using the snapshots taken with the Kodak DC-40 digital still camera, a series of symmetric tiles were generated using the principles outlined in the article. The original picture in these figures is in the upper left, and the tiled results are shown in the other sections. See if you can find the areas of the pictures used for the tiles.

How To

After you have the desired picture on the screen, use to brush tool in DPaint to grab a small section of it. Notice that the grabbed brush stays attached to your cursor as you move it. With the brush graphic attached, click on the Symmetry tool with the right mouse button. This brings up its requester. The default settings are Point (not "Tile"), with a number six below that. Click OK, leaving the defaults in place (when you have the hang of the process, you can go back and explore these settings and what changing them does).

Now click the left mouse button on the Symmetry Tool, activating its use. Almost immediately, you see that a number of colored silhouettes representing your cutout brush are orbiting a point on the screen. This is exactly what you want. Move the brushes until you get a pattern that you like, and click the left mouse to turn Symmetry off. Congratulations! Your first step in the journey of a thousand graphics has been completed! Now, grab the pattern you just tiled painted down.

If the pattern is too large for your liking, go to the "Brush" menu and resize it by half. Now, click the right mouse on the paint Fill Tool (Bucket Icon). This brings up its requester settings. Click on "From Brush", and notice that the brush you created appears in the settings window. Life is good. Click OK. Now, with the Paint Bucket on, click and watch as the screen is filled with your object of desire, a tiled surface that can be used as a texture map.

That's all there is to it. Take a look at the accompanying graphics to see how far this simple texture creation method can be pushed, and the results that are possible. All you need is a little experimenting time, patience, and a suitable graphic to start with.

Where To Tile?

Where would you use tiled textures? Most anywhere. They work as a great backdrop for text, though either they have to be less busy, or the text has to be outlined to set it off from the background graphic. They work great as texture maps for high quality animations. The obvious use is for textured floors, but that's only if your creativity buys into the restrictive "should/shouldn't" syndrome.

You could just as well use them to texturize a humanoid figure, or wrap them on objects of any shape. One scene I'm working on is called "Temple of the Caliph", and as you can imagine, it makes good use of exquisitely tiled surfaces and mosaics.

Enjoy! See you in ROMulan space.

•AC•





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Web Typesetting

Part 4: Publishing & Tables

by Randy Finch

How to get your beautiful Home Page on the Web for the World to see.

Hello. Thanks for tuning in for the fourth part of this series of articles about publishing on the World Wide Web. Since this series began I have had several people ask that I cover Amiga tools for assisting in Web publishing.

It was not my original intent to cover tools; rather, I had intended to just show how to use HTML to create Web pages and leave it up to the reader to decide what tools to use. However, due to these requests, I am now considering an article about the various Web publishing tools for the Amiga, meager though they are. I will leave this article for the end of the series. For now, let's continue our original trek.

In this article, I will discuss how to get those beautiful Web pages on-line for the world to see. I will also delve into one of my favorite additions to the HTML standard, tables.

Publishing

Getting your Web pages onto your Internet Service Provider's (ISP) server and giving the world access to them is easier than you might think. At least this is true when working with a Unix server. Since I do not have any experience with Web publishing on a Windows NT server or any other, I cannot speak for them.

There are basically two steps involved. First, you must set the appropriate access privileges to the

directory in which you will store your Web pages. Second, you must copy your HTML files and support files to that directory. The first step only needs to be done once. The second step has to be done whenever you update your Web pages.

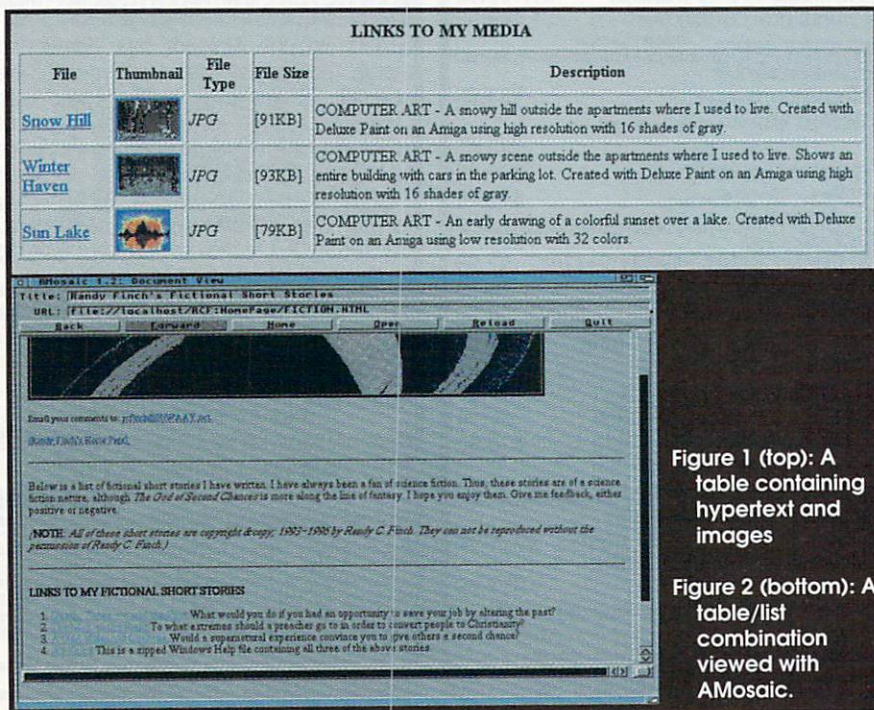
Telnet

In order to set the privileges to your Web directory, you will first need to find out the name of the directory designated by your ISP to be used for Web publishing. If one has not been designated, you may have to create one. To accomplish these tasks, you need to use a telnet program.

You can find Amiga telnet programs on AmiNet and other Amiga sites. Telnet allows one computer to log into another computer and execute commands. This is strictly a command line mode operation.

Typically, when you call into your ISP's server and successfully log in with your user name and password, you are placed in your own personal subdirectory, usually with the same name as your user name.

Within that subdirectory, you may or may not have a subdirectory designated by your ISP to be used for your Web pages. If you are not provided with one, you need to find out from your ISP if the directory you create needs to have a particular name or if you can give it any name and then inform the provider what it is. My ISP said I had to create a subdirectory named "public_html" for my Web pages. To create a directory in Unix,



you simply type "mkdir dirname". Look familiar?

Once you have a directory in place for storing your Web pages, you need to set the access privileges to it appropriately. Unix splits users into three categories: user, group, and others. User is you, group is anyone in your same group, and others is anyone else. For each of these categories, access privileges of read, write, and execute can be set. You need to check with your ISP to be certain of how to set the privileges.

In my case, I gave myself all three privileges for both my user directory and my public_html directory. The group was given no access privileges to my user directory, but read and execute privileges to my public_html directory. Others were given read privileges to my user directory and read and execute privileges to my public_html directory.

The "chmod" command is used for setting privileges. There are several ways to accomplish this task, but I will not discuss them. The simplest way is to type "chmod 701 ." to set the privileges to the current directory (which should be your user directory). Type "chmod 755 public_html" at the command prompt to set the privileges of the Web pages directory. Once this is done, you can exit the telnet program and get ready to copy your Web files to the server.

FTP

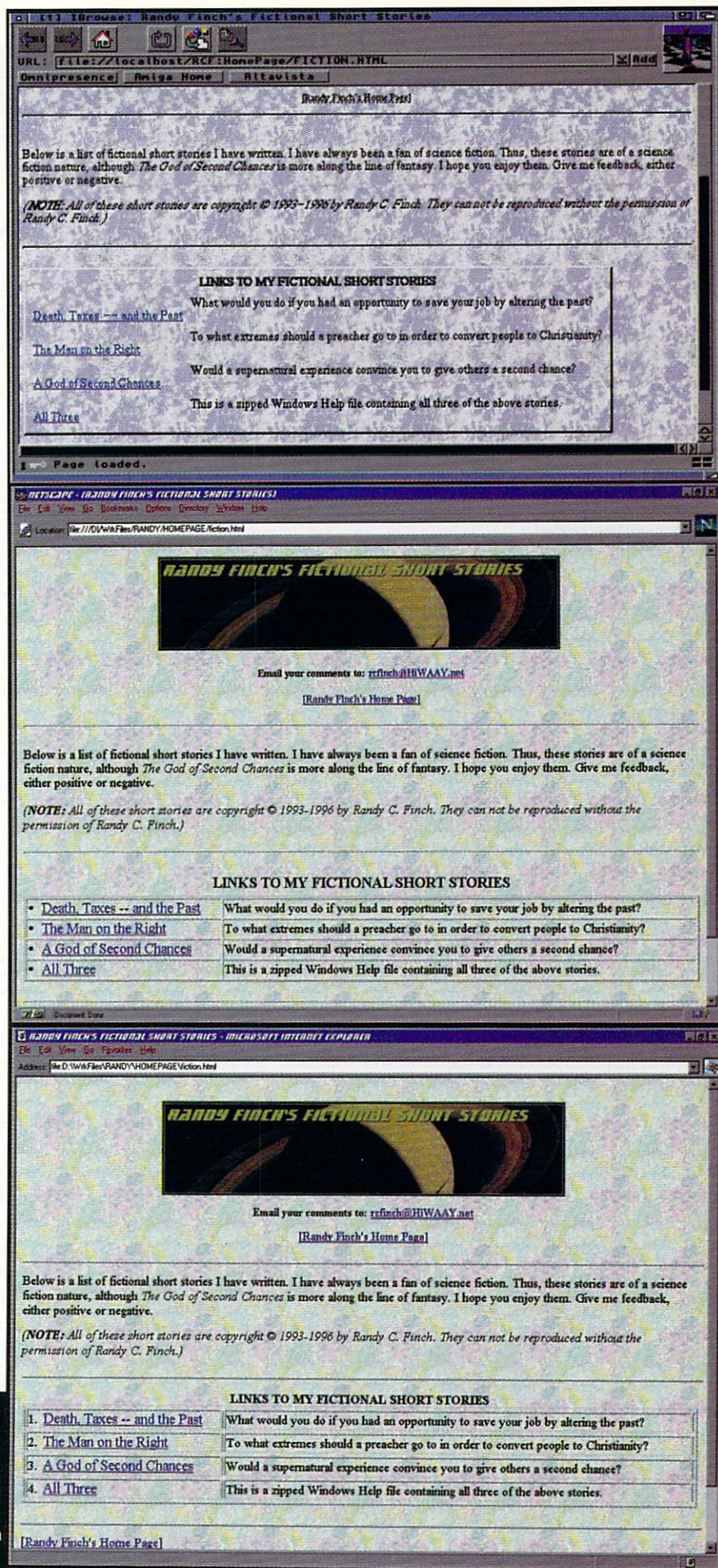
To copy files from your computer to the server, you need an FTP (file transfer protocol) program. FTP programs come in different flavors. Some are command line based so you have to type in commands to accomplish your task. This is not too terribly complicated, but I prefer the second flavor which is GUI based.

These programs typically look something like Directory Opus, having two windows. One window shows the

Figure 3 (top): A table/list combination viewed with IBrowse.

Figure 4 (middle): A table/list combination viewed with Netscape Navigator.

Figure 5 (bottom): A table/list combination viewed with Microsoft Internet Explorer.



directory structure of the local computer, another shows the directory structure of the remote computer, in this case your ISP server. (For an example of a GUI based FTP program for the Amiga, see Rob Hayes' column in the May 1996 issue of AC.)

FTP programs allow you to create and delete files and directories on both the local and remote computer. Files can be transferred in either direction, also. One thing to be aware of is that files can be transferred in either binary or ASCII mode. The former transfers files with no translation. The latter will translate files if necessary.

What does this mean? Well, every computer system has a different way of handling a new line within a text file. The PC places a carriage return and a line feed between lines of text. Unix only places a line feed between lines of text. Thus, if you perform an FTP ASCII transfer of a file from a PC to a Unix system, the carriage returns will be stripped. If transferring in the other direction, carriage returns will be added.

Since the Amiga only places line feeds between lines of text just as Unix does, this is not of great concern for Amiga users on a Unix server. However, if an Amiga user happens to be on a Windows NT server, it is of concern. Typically, you will want to copy all of your HTML and text files in ASCII mode and all of your graphics, sounds, animations, etc. in binary mode.

Once you have copied your files to your Web page directory, it is time to test them. While still on-line, load your favorite browser and type in the URL assigned by your ISP for accessing your home page. For instance, my home page's URL is "http://fly.hiwaay.net/~rcfinch/home.html". As it turns out, most ISPs will allow you to drop the name of the HTML file, as in "http://fly.hiwaay.net/~rcfinch" when accessing a home page if it is named home.html and/or index.html.

When testing your pages, check all of the hypertext links, graphics displays, etc. to make sure everything is working correctly. If something is wrong, correct the files on your local computer and then transfer, via FTP, the updated files to the server. Remember to retest.

Tables

Let's move on now to more HTML programming. One of the most popular additions to the HTML 3.0 standard is tables. This feature allows data to be organized on a Web page in a structured row and column format similar to what you see in a spreadsheet. You can designate whether or not the data in the table be separated by borders or not. There are five tag combinations needed for producing tables: <TABLE>...</TABLE>, <CAPTION>...</CAPTION>, <TH>...</TH>, <TR>...</TR>, and <TD>...</TD>. Let's take a look at each.

<TABLE>...</TABLE>

<TABLE> identifies everything following it up to the closing </TABLE> tag to be one table. The BORDER="..." attribute lets you specify whether or not a border should be

Listing 1.

Partial Listing of a Web Page Containing a Table with Hypertext and Images

```
<HTML>

<HEAD>
<TITLE>Randy Finch's Media</TITLE>
</HEAD>

<BODY>
<TABLE ALIGN=CENTER WIDTH=100% BORDER=2>
<CAPTION ALIGN=TOP><BIG><B>LINKS TO MY MEDIA</B></BIG></CAPTION>

<TR>
<TH>File</TH>
<TH>Thumbnail</TH>
<TH>File Type</TH>
<TH>File Size</TH>
<TH>Description</TH>
</TR>

<TR>
<TD><A HREF="media/snowhill.jpg"><FONT SIZE=+1>Snow Hill</FONT></A></TD>
<TD><A HREF="media/snowhill.jpg"><IMG SRC="thumbnails/snowhill.gif"></A></TD>
<TD><EM>JPG</EM></TD>
<TD>[91KB]</TD>
<TD>COMPUTER ART - A snowy hill outside the apartments where I used to
live. Created with Deluxe Paint on
an Amiga using high resolution with 16 shades of gray.</TD>
</TR>

<TR>
<TD><A HREF="media/winthavn.jpg"><FONT SIZE=+1>Winter Haven</FONT></A></TD>
<TD><A HREF="media/winthavn.jpg"><IMG SRC="thumbnails/winthavn.gif"></A></TD>
<TD><EM>JPG</EM></TD>
<TD>[93KB]</TD>
<TD>COMPUTER ART - A snowy scene outside the apartments where I used to
live. Shows an entire building
with cars in the parking lot. Created with Deluxe Paint on an Amiga using
high resolution with 16 shades of
gray.</TD>
</TR>

<TR>
<TD><A HREF="media/sunlake.jpg"><FONT SIZE=+1>Sun Lake</FONT></A></TD>
<TD><A HREF="media/sunlake.jpg"><IMG SRC="thumbnails/sunlake.gif"></A></TD>
<TD><EM>JPG</EM></TD>
<TD>[79KB]</TD>
<TD>COMPUTER ART - An early drawing of a colorful sunset over a lake.
Created with Deluxe Paint on an
Amiga using low resolution with 32 colors.</TD>
</TR>

</TABLE>
</BODY>

</HTML>
```

drawn around the table. In Netscape, the width of the border can be specified with this attribute. There are some additional Netscape only (for now) attributes for setting cell spacing (CELLSPACING="..."), cell padding (CELLPADDING="..."), and the width of the table (WIDTH="..."). All of the tags defined below must appear within the <TABLE>...</TABLE> tags.

<CAPTION>...</CAPTION>

Text between the <CAPTION>...</CAPTION> tags will appear as a heading outside the table itself. One attribute is available for setting alignment (ALIGN="..."). Possible values for alignment are TOP and BOTTOM.

<TR>...</TR>

These tags define one row of a table. Individual cells within the row can either be header cells or data cells (see below). There are two attributes available with these tags. The ALIGN="..." attribute sets the horizontal alignment of the cell contents in the row. LEFT, CENTER, or RIGHT can be used. The second attribute, VALIGN="...", is a Netscape one for setting the vertical alignment with the cells. Values can be TOP, MIDDLE, BOTTOM, or BASELINE.

<TH>...</TH>

These tags appear between the <TR>...</TR> tags. They surround the text for a table header cell. Typically these will appear on the first row of a table to label what appears in the cells underneath them. Several attributes are available. The ALIGN="..." and VALIGN="..." attributes are just like those described above except they only apply to the individual cell. The ROWSPAN="..." and COLSPAN="..." attributes let you define how many rows and columns a cell will span.

NOWRAP specifies that the contents of the cell should not automatically wrap to a new line, the default method. Finally, the WIDTH="..." (Netscape only) lets you specify the exact width of the cell in pixels or as a percentage. If this attribute is not used, then the browser decides what the width should be.

<TD>...</TD>

These tags also appear between the <TR>...</TR> tags. They surround the text for a table data cell which is what most of the cells in a table will be. All of the attributes available for the header cells are also available for the data cells.

Putting It All Together

Tables are very flexible. Data cells can contain hypertext, images, lists, and even another table. For instance, Listing 1 shows an excerpt from one of my Web pages that embeds hypertext and images in the data cells. Figure 1 shows what it might look like in a browser. I use tables extensively in my Web pages because I believe it to be the most effective way to present certain types of information. Support for tables has been lacking in Amiga browsers; however, IBrowse now supports this feature.

Dual Code - Tables and Lists

One problem I faced when I first started creating my Web pages was deciding whether or not to use tables. I wanted to present information in table form to people who had browsers supporting this feature, but I did not want to exclude people using browsers that did not support tables. I finally decided to create two pages for each page of information: one using lists, the other using tables. The visitor could decide which one to use.

Fortunately, I recently discovered a way to include code for tables and lists in the same HTML file. When a person views this file with a browser supporting tables, he

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or she sees a table. On the other hand, if a person views this file with a browser that does not support tables, he or she will see a list instead. This works because browsers typically ignore any tags they do not understand. Let's take a look at an example.

Listing 2 shows the complete code for one of my Web pages. Notice that it contains the standard tags for creating a table. However, riddled throughout the contents of the table are tags for creating a list. Just after the `<TABLE>` and `<CAPTION>` tags is an ordered list tag, ``. Then, immediately after the first data cell tag, `<TD>`, of each row is a list item tag, ``.

Finally, just before the closing table tag, `</TABLE>`, is a closing ordered list tag, ``. There is a space following the second data cell tag, `<TD>`, in each row. This is needed when a browser displays the file as a list so the text in this cell will be separated from the text in the first cell. Let's see how this code appears in various browsers.

Figure 2 shows the file as viewed in AMosaic on an Amiga. Since this browser does not support tables, it ignores all of the table related tags. Look through the code in Listing 2 and imagine what it would look like if all of the table tags were removed. All that would be left is what you see in Listing 3. It looks just like the code that would have been used to create an ordered list. Even the text for the caption shows up as a regular line of text. AMosaic aptly ignores the table tags and presents a nice ordered list as it should.

Figure 3 shows the file as viewed in IBrowse on an Amiga. Since IBrowse supports tables, it reads the table tags. It put a border around the table as requested, but it did not put dividing lines between each cell like other table supporting browsers. Apparently, it ignored the list tags since no number appears in front of the content of the first cell of each row.

However, it did cause a slight glitch in that the content of each first cell is shifted down by one line relative to the other cell on the row. Perhaps this little problem will be cleared up in the final release.

Figure 4 shows the file as viewed in Netscape Navigator on a PC running Windows 95. Everything looks perfectly fine, doesn't it? Well, actually it doesn't. Navigator treated the ordered list as an unordered list for some strange reason. Notice the circular bullets at the beginning of each row.

Figure 5 shows the file as viewed in Microsoft Internet Explorer on a PC running Windows 95. It displayed the cell contents correctly, putting a number on the first item of each row. However, it did something strange with the vertical borders and separators. There seems to be a double line. I do not know why this occurred.

Well, as you can see, the dual coded tables and lists seems to work quite well even though each browser has its own unique glitches. However, I believe these slight problems are quite acceptable when you consider that only one page has to be maintained rather than two.

Listing 2.

HTML Code for One of My Web Pages Containing a Combined Table and List

```
<HTML>

<HEAD>
<TITLE>Randy Finch's Fictional Short Stories</TITLE>
</HEAD>

<BODY BACKGROUND="backgrounds/InfraredMap.jpg">

<CENTER>
<IMG SRC="titles/fiction.gif">
<H5>Email your comments to: <A
  HREF="mailto:rcfinch@HiWAAY.net">rcfinch@HiWAAY.net</A></H5>
<H5><A HREF="home.html">[Randy Finch's Home Page]</A></H5>
</CENTER>

<HR>
<P>
Below is a list of fictional short stories I have written. I have always
been a fan of science fiction. Thus, these
stories are of a science fiction nature, although <EM>The God of Second
Chances</EM> is more along the line of
fantasy. I hope you enjoy them. Give me feedback, either positive or
negative.
<P>
<EM>(<STRONG>NOTE:</STRONG> All of these short stories are copyright
&copy; 1993-1996 by Randy C.
Finch. They can not be reproduced without the permission of Randy C.
Finch.)</EM>
<P>
<HR>
<P>

<TABLE ALIGN=CENTER WIDTH=100% BORDER=2>
<CAPTION ALIGN=TOP><BIG><B>LINKS TO MY FICTIONAL SHORT STORIES</B></BIG></
CAPTION>

<OL>

<TR>
<TD><LI><A HREF="fiction/DeathTaxesPast.html"><FONT SIZE=+1>Death, Taxes -
and the
Past</FONT></A></TD>
<TD>What would you do if you had an opportunity to save your job by
altering the past?</TD>
</TR>

<TR>
<TD><LI><A HREF="fiction/TheManOnTheRight.html"><FONT SIZE=+1>The Man on
the
Right</FONT></A></TD>
<TD>To what extremes should a preacher go to in order to convert people
to Christianity?</TD>
</TR>

<TR>
<TD><LI><A HREF="fiction/AGodOfSecondChances.html"><FONT SIZE=+1>A God of
Second
Chances</FONT></A></TD>
<TD>Would a supernatural experience convince you to give others a second
chance?</TD>
</TR>

<TR>
<TD><LI><A HREF="fiction/scifi3.zip"><FONT SIZE=+1>All Three</FONT></A></
TD>
<TD>This is a zipped Windows Help file containing all three of the above
stories.</TD>
</TR>

</OL>

</TABLE>

<P>
<HR>
<A HREF="home.html">[Randy Finch's Home Page]</A>
<HR>
<I>Last modified on April 5, 1996</I>
<ADDRESS>Randy Finch at rcfinch@HiWAAY.net</ADDRESS>
</BODY>

</HTML>
```


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Listing 3.

Listing 2 with the Table Tags Removed

```
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<HEAD>
<TITLE>Randy Finch's Fictional Short Stories</TITLE>
</HEAD>

<BODY BACKGROUND="backgrounds/InfraredMap.jpg">

<CENTER>
<IMG SRC="titles/fiction.gif">
<H5>Email your comments to: <A
HREF="mailto:rcfinch@hiwaay.net">rcfinch@hiwaay.net</A></H5>
<H5><A HREF="home.html">[Randy Finch's Home Page]</A></H5>
</CENTER>

<HR>
<P>
Below is a list of fictional short stories I have written. I have always
been a fan of science fiction. Thus, these
stories are of a science fiction nature, although <EM>The God of Second
Chances</EM> is more along the line of
fantasy. I hope you enjoy them. Give me feedback, either positive or
negative.
<P>
<EM>(<STRONG>NOTE:</STRONG> All of these short stories are copyright
&copy; 1993-1996 by Randy C.
Finch. They can not be reproduced without the permission of Randy C.
Finch.)</EM>
<P>
<HR>
```

```
<P>
<BIG><B>LINKS TO MY FICTIONAL SHORT STORIES</B></BIG>

<OL>

<LI><A HREF="fiction/DeathTaxesPast.html"><FONT SIZE=+1>Death, Taxes - and
the Past</FONT></A>
What would you do if you had an opportunity to save your job by altering
the past?

<LI><A HREF="fiction/TheManOnTheRight.html"><FONT SIZE=+1>The Man on the
Right</FONT></A> To
what extremes should a preacher go to in order to convert people to
Christianity?

<LI><A HREF="fiction/AGodOfSecondChances.html"><FONT SIZE=+1>A God of
Second
Chances</FONT></A> Would a supernatural experience convince you to give
others a second chance?

<LI><A HREF="fiction/scifi3.zip"><FONT SIZE=+1>All Three</FONT></A> This
is a zipped Windows Help file
containing all three of the above stories.

</OL>

<P>
<HR>
<A HREF="home.html">[Randy Finch's Home Page]</A>
<HR>
<I>Last modified on April 5, 1996</I>
<ADDRESS>Randy Finch at rcfinch@hiwaay.net</ADDRESS>
</BODY>

</HTML>
```

Closing Comments

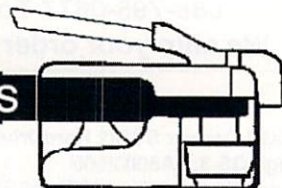
That's it for this time. Remember, let me know your home page address when you get your pages on line.

•AC•

on line

amiga telecommunications

by
Rob
Hays



Travel the internet with the newest Amiga browser, Voyager 1.0, and discover more excellent Amiga web sites.

It has become almost routine; a new month, another new Web browser. This month we will take a look at Voyager 1.0, the latest entry into the Amiga browser field.

Voyager 1.0 is a freely distributable version of the browser renamed Mindwalker by Amiga Technologies, and intended for inclusion in their Surfer pack. With the latest twist in the

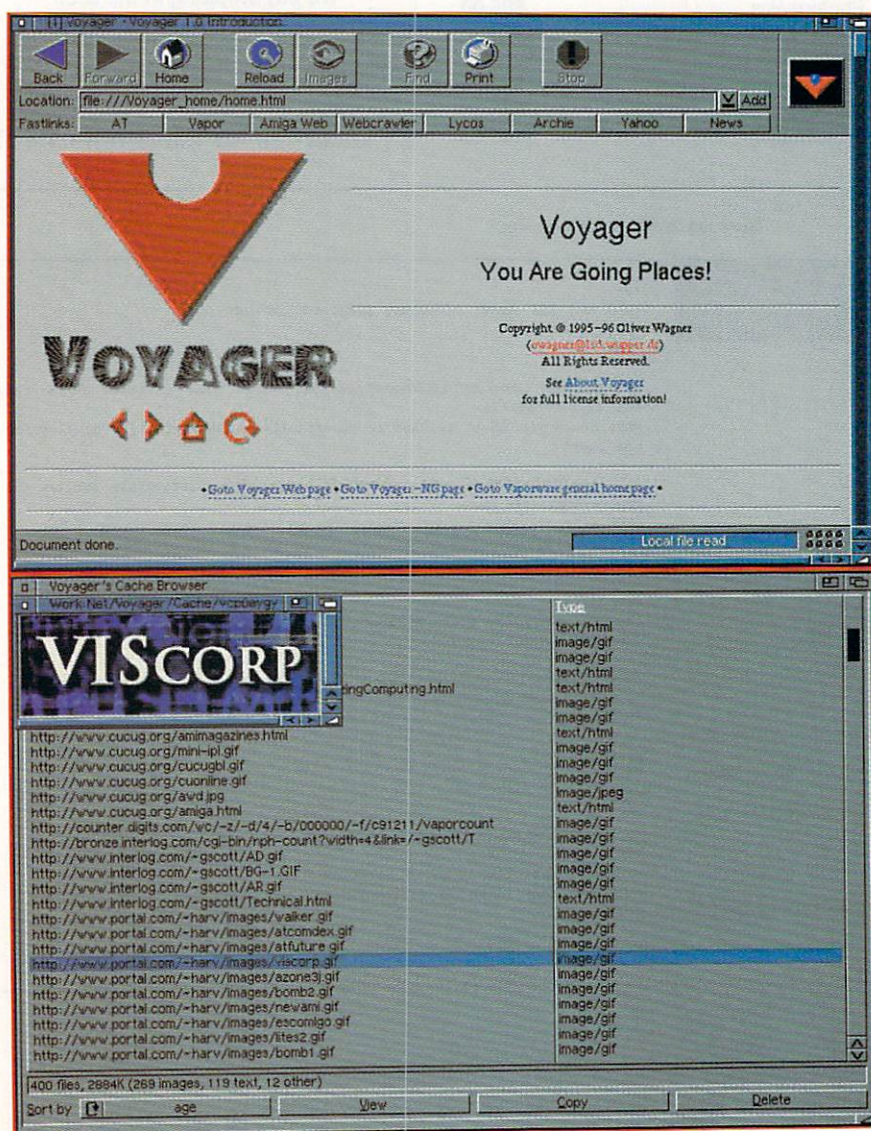
Amiga story however, plans for the North American version of this package seem to be on hold.

Programmed by Oliver Wagner, Voyager 1.0 (Figure 1) is already chock-full of features, including some still missing from other Amiga browsers. Capable of multiple windows connected to different sites, Voyager also supports up to eight simultaneous connections. This allows it to transfer several graphics at once, rather than sequentially, as with AMosaic. If you have multiple windows open, a menu item allows you to choose which one to work in, and pops it to the front.

Bookmarks for favorite Web pages are managed through their own window. Here you can add, delete, and rearrange bookmarks, as well as jump to them by double clicking on the name. Bookmarks can also be assigned to named groups, so that they can be arranged into any logical order you please. Your bookmarks can also be displayed on the main Voyager screen in HTML form, like their own Web page, and the links activated by a single mouse click. There are also configurable fastlink buttons that can be programmed for your personal favorite sites.

Figure 1 (top): Voyager 1.0 is capable of multiple windows connected to different sites and supports up to eight simultaneous connections.

Figure 2 (bottom): CacheBrowser lists the contents of the cache directory which can be organized by age, type, or the URL they came from, and more.



A feature still missing from other browsers is the Print button. A click here will send all text information at the current page to your Amiga's printer. None of the graphics or HTML codes are printed, although you can view the HTML code for your current screen.

One new feature I really like is the CacheBrowser. This utility opens a window (figure 2) and lists the contents of the cache directory. This includes HTML versions of recently visited Web pages, as well as the graphics. The list of your cache directory files can be organized by age, type, or the URL they came from, and selecting one of the entries activates three other buttons. With these you can copy the file to another directory, delete it, or view it. Choosing to view

Bookmarks for favorite Web pages are managed through their own window. Here you can add, delete, and rearrange bookmarks, as well as jump to them by double clicking on the name.

the file will open a window pre-sized to display the image or file you have chosen.

Voyager requires OS 3.0 or above, and MUI 3.3 or above, and can be run in local mode without any network protocol running. You can find Voyager 1.0 on Aminet in the comm/net subdirectory, and at the Vapor homepage at

<http://www.vapor.com/support/voyager/>

HotList of the Month

Harv Laser, sysop of the Amiga Zone on Portal, has been part of the Amiga community since the days of the original A-1000. The Amiga Zone has had its own trials and tribulations



Figure 3 (top): The Amiga Zone is an eclectic page of links, info, and humor. Figure 4 (middle): Check out this technical page for critical Amiga information. Figure 5 (bottom): The Champaign-Urbana Commodore Users Group's page links to Amiga sites around the Web and around the globe.

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over the years, but now is aiming to be the first to make all of its vast resource of files and messages available to members through the Web. While this is still a way off, be sure to check out

<http://www.portal.com/>

~harv

This is an eclectic page of links, info, and humor (Figure 3). Be sure to have the Sun Audio datatype installed, and check out the sound clip of the Commodore Marketing Machine at work!

If you have lost the manuals that came with your Amiga, or perhaps purchased a used machine or peripheral, here is a spot you will want to bookmark:

<http://www.interlog.com/>

~gscott/Technical.html

This page can be nothing less than a lifesaver if you need the pinout diagram for just about any Amiga model, port, or device (Figure 4). You

can also find information on the internal jumper settings, SCSI problems, and much more.

On the other hand, if you are looking for a general jump-off point for Amiga related topics on the Web, check out

<http://www.cucug.org/>

amiga.html

Sponsored by the Champaign-Urbana Commodore Users Group, links found here connect to all sorts of Amiga sites around the Web, and around the globe (Figure 5).

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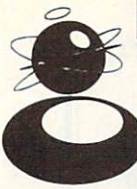
Please include a SASE if you need a personal reply.

If you run an Amiga specific BBS, send me the information callers will need to access your system. Phone number(s), modem speeds, software settings, etc. As a service to the Amiga community I will include the information I receive in this column from time to time.

If you come across any World Wide Web sites you feel would be of interest to the Amiga community, pass them along for inclusion in the Hotlist of the Month. Send the info to any of my addresses above.

That's all for now. See you on line!

•AC•



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about the World Wide Web and other hot topics, with everything from background info for the novice to tips for the advanced user. Whether you want to buy your first modem, connect to the Internet, browse the Web, or share files over a network (of only Amigas or also PCs, Macs and/or Unix), these 256 pages include vital information for you. Author Dale L. Larson is a former Software Engineer from Commodore's Amiga Networking Group, and is now *el Presidente* of IAM. Eight disks of freely redistributable software (not supported by IAM) include everything you need to get started.

"Larson certainly knows his stuff...informative and pleasantly easy to follow." - Amiga Shopper

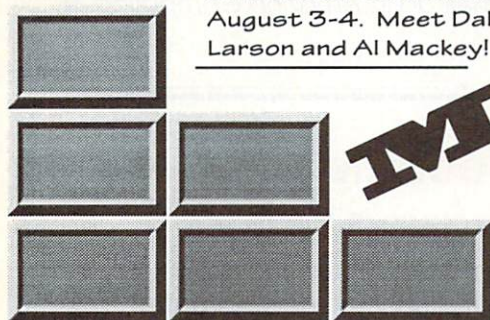
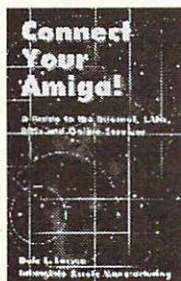
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so much in so few words." - Steve Bower

"As a reference and product guide, as well as a tutorial, it excels." - Amiga Report

Hope to see you at the Amiga Convention '96 in Montreal, August 3-4. Meet Dale L. Larson and Al Mackey!



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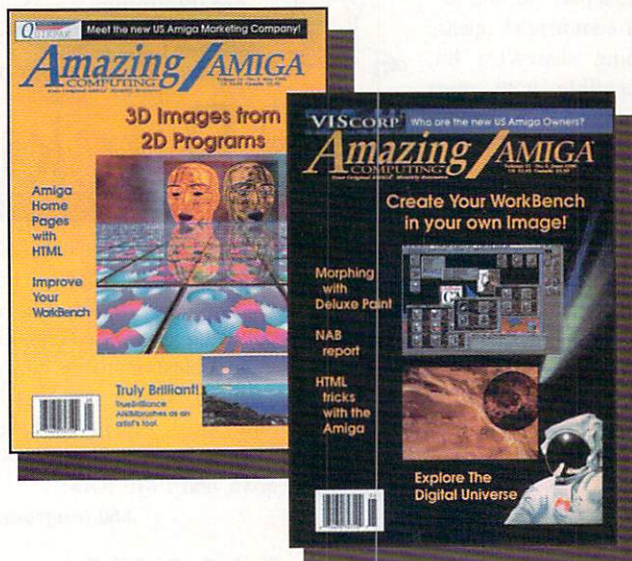
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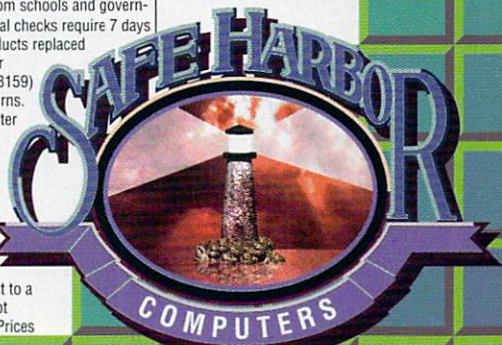
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Why is a major computer art competition held in Finland? An Interview with Martin Keitel, the arts manager of JAZZ.BIT 96

Interview by Marc R. Hoffman

Computer art is a new and growing field. Using the computer as a means of artistic expression seems to be "catching on" all over the world. With international computer art festivals springing up all over, it is getting much easier for the computer artist to get exposure for his or her work. Recently, I had a chance to interview Martin Keitel, the arts manager of JAZZ.BIT 96, a computer art competition held in Finland.

AC: First of all, tell us a little about yourself.

MK: I am the arts manager of JAZZ.BIT 96 and I have also done the web pages for the contest. On the

previous years I took part in it as a contestant (I won the 2nd prize in 2D animation section in 1994) and as an assistant in practical matters during the festivals. Yet, only this year, I am actually taking part in organizing the contest.

I am a computer animator and musician having done mostly freelance work so far. I have made some commercial animations for Finnish television and had some success in contests, the latest being the first prize in the video personal computer section of Bit.Movie '96 together with Harri Mehtomaa with a music video called "Seek for Love". As an

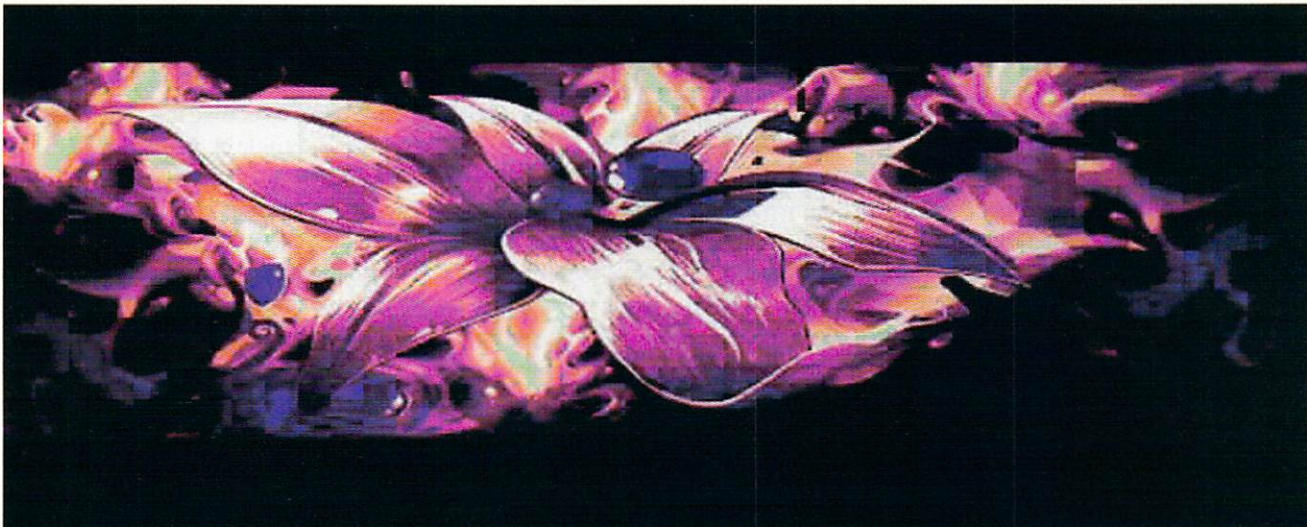
animator I'm mainly interested in 3D character animation and modeling.

AC: In your own words, please tell our readers some of the background information on JAZZ.BIT. For example: due dates, computer platforms accepted, different categories in the competition, prizes, etc.

MK: JAZZ.BIT is an international contest for computer generated animations, images, jazz music and multimedia organized by The Audiovisual Communications Center Of Western Finland. The contest is open to all artists, for professionals as well as amateurs all around the



1st Place, JAZZ.BIT 1995, Static Image Category: MNEMONICON by Phillip George, Australia



2nd Place, JAZZ.BIT 1995, Static Image Category:
FUNKY FLOWER by Lasse Louhento, Finland

world. It was first organized in 1994. This year the festival itself in Pori is held later than on the previous years, that is September 27 - 28. The first two festivals were held at the same time with the Pori Jazz international jazz festival, but we decided it's better to separate JAZZ.BIT from the jazz festival.

Prizes are given for three works in each section and in each the first prize is 1500 FIM (approximately US\$ 300). So it's not a chance to get rich but then again this is not the point of competing. A prize in an international contest is always a good reference and it helps you to get further on your career as a computer artist.

The contest is divided into 5 sections:

1. Computer Generated Jazz music - Jazz style music created with tracker or MIDI software mainly,
2. Static Image - digital pictures with free contents and realization techniques,
3. Realtime Animation - 2D or 3D animation performed on the computer screen in realtime without additional hardware,
4. Interactive Computer Media - including WWW pages, interactive animation and music, multimedia and computer games with more or less artistic contents
5. Video Animation - works on video

that are totally or partially animated. All usual computer platforms are accepted: Amiga, PC and Macintosh for all sections, in the Jazz music section also Atari ST, and in video section also workstations. The deadline for the entries is August 19, 1996 so there is still plenty of time to enter! Every contestant can take part with three works per section except in static image section with five works.

AC: What are some of the main reasons that you decided to put on the JAZZ.BIT festival?

MK: JAZZ.BIT is part of a project concerned with the development of Audiovisual communications as well as related industry and culture in Western Finland. In 1994 a group of people associated with this project noticed that there is no computer art festival of this kind in Finland and neither in the rest of Scandinavia (some other festivals have emerged since that date) and there is a chance to establish a happening of this sort here in Pori.

Also involved was the Arts and Crafts school of Western Finland (it has for example provided some machinery for the use of the contest), where people can study animation among other subjects. One of the founders was animator Harri Sarri, who had taken part in Bit.movie - a big annual computer art festival in

Italy. JAZZ.BIT is in fact similar to Bit.movie in many ways, yet not a copy of it.

AC: How has the Amiga influenced the competition?

MK: Well, I am an Amiga user myself (I own an Amiga 4000 040 and make animations with Imagine and DPaint) and without the Amiga I possibly wouldn't have become a computer animator. The same goes for many others, since Amiga was, especially a few years ago, the only affordable computer to make animations, whether 2D or 3D. Also the animation courses at the local Arts and Crafts school used to be given using Amiga computers (now they also use PCs). If there was no Amiga, this contest probably wouldn't exist, not at least in this scale.

AC: How strong has the Amiga been in the past competitions in comparison with other computer platforms?

MK: Most of the contestants in JAZZ.BIT are amateurs (even though JAZZ.BIT is open for everyone, its main function is to give opportunity for the amateurs to show their skills). And let's face it: Amiga is the computer that brought computer graphics and animation into the hands of amateurs and hobbyists.

So, even though today the PC and Mac have strongly taken a grip of the animation and graphics markets, many of the long term

enthusiasts are still Amiga users or at least former Amiga users. This shows in the statistics: Last year more than 60 % of all works were done on Amiga and in the animation sections about 70 %. The news may say that the Amiga is dead, but the statistics of animation contests surely say something else!

AC: What sets JAZZ.BIT apart from other computer art festivals?

MK: Well, first of all it is in Finland - no others are! One thing that is quite original for JAZZ.BIT is the Jazz music section. This is a feature that is obviously related to the Pori Jazz festival which is held in the same city. So far the entries for this section haven't been extremely numerous compared to the other section - of course not very many people make Jazz music on computers, but at least there is one festival where they can enter their works!

Naturally there are many things that are different from other festivals. The sections are a little different the rules are a little different. It has a character of its own, and hopefully during the years we can build it into a well known festival with its own unique appeal.

AC: How has JAZZ.BIT grown over the past years?

MK: JAZZ.BIT started off from very small resources originally. Any new festival - especially if it's arranged in a small country - has to exist for a few years before it establishes its place among other festivals of its kind in the world - unless it fails altogether. This is the third year of JAZZ.BIT and so far it's still there!

The number of contestants for both years was quite satisfactory and we didn't even have resources for dealing with much larger amounts of works than what we got. The first year there were a little more entries than last year. This can be explained by the fact that it was the first time and people could send all their old works which already had been in other contests even years ago. Anyhow there were many improvements last year, including the possibility to see the works of the static image section in the internet.

We also arranged a first-time meeting for Finnish animators and people interested in animation.

AC: What changes and improvements have you made to this year's contest, and what changes or improvements do you plan to add in future competitions?

MK: This is the first year that I'm involved in organizing the contest and I have indeed used the opportunity to update the sections, the rules and some other things to make the contest more appealing as well as more functional.

I guess the main innovation is the enhanced usage of internet. The contestants can not only send the entry forms via internet, but also the works themselves (excluding video animations for understandable reasons) by uploading them into our ftp server.

The 2D and 3D animations were merged into one realtime animation section. Since the prices of computers and other hardware with good graphics capabilities have come down significantly, the quality of animations in terms of frame rates as well as pixel and colour resolution is becoming better. As a result you can show animations in "realtime" technically almost of the same quality as video animations recorded frame by frame. The sizes of these animation files can, however, be so huge that it's usually much more practical to transfer them on video than saving them on disk or even uploading them as digital files via internet.

Because of these facts the amount of entries in realtime animations sections is decreasing. If, however, we see very many entries coming into this joined section this year, we can divide it into two separate sections again next year. And of course we will maintain the realtime animation section, because these animations have a function of their own compared to video animation.

Previously the interactive section included only interactive animation and it was too narrow to appeal to many contestants. Now it includes all of the most popular digital interac-

tive media works - also WWW pages that can be entered in the contest just by giving the URL (usually the http address). Of course the pages should have a graphic or artistic touch in order to be of any interest to us.

What's new also is that each section (except Jazz music) is divided into different categories describing the works's nature and purpose. These categories can be easily selected in the entry forms (in WWW, they are simple menu options).

What happens in the future depends much on this year's contest. We'll see how many works we get in each section and decide if we should make some changes. We'll see how many works we receive through the internet and what kind of feedback we get from this system. We have some plans of integrating other kinds of related happenings to JAZZ.BIT and already for this year's festival in September we are planning to have some animation related courses and lectures as well as a wider and better organized meeting for animators.

Of course the future also depends on funding. We have had some big sponsors so far but we are all the time looking for more. The interest of investors naturally depends on the publicity we manage to gain internationally.

AC: What kind of jurors do you have judge the show? That is, what kind of artistic backgrounds do they have?

MK: The jury changes from year to year, but it consists of professional people in the Audiovisual field in Finland. This includes people working on film industry, in art-related professions and on animation. This year I'll probably be in the Jury too and for myself I can at least say I have years of artistic background as an animator and musician.

AC: In what direction do you see computer art going?

MK: This is an interesting matter. What will essentially change the situation in the near future is the price drop of the hardware and software and perhaps even more the software producers' tendency to focus on user-friendliness in computer art programs. Such devices as

flat displays and helpful 3D inputting devices are also on their way to the mass markets.

Because of these facts more and more people will be able to produce computer art and also the professionals of "traditional" arts will find the computer as a more appealing tool. So the competition will get tougher. This will, however, be compensated with a growing need for computer art products.

Yesterday, a computer animation in a TV commercial for example, was regarded as something special. Today every major commercial producer uses computer animations. Tomorrow a commercial without computer animation will be something special! It will no longer be a matter of whether to afford a computer animation or not, but whether to afford a good and expensive animation or a cheap and unprofessional animation.

There will be more computer art festivals all over the world, yet the number of computer artists is probably growing even faster. So the quality of the awarded works is getting better all the time (more works of course get excluded from contests too). This will lead to increased respect for the genre among the public as well as the critics.

Of course we could assume there will be a point when computer art loses its "glow" or gets "out of fashion." But, we must remember that the computer is a TOOL to make art, and a work of art should not be judged on the basis of what was used to create it. In the future in many cases most people won't be able to say whether a work of art is done on a computer or with other means. So I think the value of contents will increase in relation to the equipment used in the creation of a work.

AC: As a computer artist myself, I am aware of some of the resistance that computer art receives, especially in the traditional art fields. How do you respond to these critics?

MK: I guess I already answered this question partially. In Finland I have noticed strong prejudice and

reservations concerning computer generated art among the public and it used to be so in the media too. But right now computer art as well as everything related to computers is IN in the media, especially television. This means that everything that is done with computers and new technology gets attention - if it's done by someone who has a reputation, that is. And like it is in other arts too, what's good and what's bad is not decided by the public but by the critics and the people controlling the media.

Unfortunately these peoples' concept of good and bad art are often based on other things than artistic contents, because they have to SELL something to the audience, and art itself doesn't sell. Computer art is brought out because it is COMPUTER art, not because it is computer ART. And people who are artistically talented and able to create beautiful images and sounds don't have a good chance to get publicity.

When it comes to individual "traditional" artists' resistance, I'm not actually concerned about that. Every artist has a right to have an opinion about different art styles and tools. Only if these artists are in the way of computer art, for example sitting in the jury of a computer art contest or in an art committee granting funds for artistic projects, it's annoying.

There is some kind of "mysticism" connected to computer arts even today. When I show a computer animation to a friend of mine and ask if he/she likes it or not, the answer may be: "I guess it's good, but I really don't know anything about computers and stuff." This is very typical, and it shows people's tendency to think that computer generated art is something that can only be understood if you know something about the technology.

But in a way this is understandable if we think a little backwards. As little as some ten years ago most computer animations were more or less experimental. It didn't necessarily look so fancy, but it was done with a computer. The computer

enthusiasts said "Wow! It's done with computers!" while others shook their heads and said "Oh, this is some modern peculiarities again" and didn't understand why the computer oriented were so fascinated. A good example could be a computer animated landscape - it didn't have to look realistic or be animated smoothly, but it was just so interesting for some of us to know how it was made.

From the early days of commercial computer art, has remained this concept that computer art is something for computer buffs only. But the situation was the same even with word processors just a little while ago! So, things will change in this matter too.

Computer animated films such as *Toy Story* help to make all the people see that it's... well - art; something beautiful, something funny, something sad, something exciting... Not BECAUSE it's made on computers, not DESPITE it's made on computers, but because it's well-made and because it WORKS!

AC: Thank you for doing this interview, and I wish you well with JAZZ.BIT.

MK: Thanks, Marc. I'm pleased to have an opportunity to spread information about our festival this way.

Information on the JAZZ.BIT 96 competition can be found on the JAZZ.BIT web page at:
<http://www.sip.fi/jazz.bit/>

Information can also be obtained by writing to:
JAZZ.BIT 96
SSVK-project
Technology Center PRIPOLI
28600 PORI
FINLAND

or contact:
Juha Selin
JAZZ.BIT Project Manager
Phone: 358-39-637 0444
Mobile: 358-49-590 478
Telefax: 358-39-627 1001
email: (selin@sip.fi)

(continued from page 48)

phase 5 went on to say, "With these features a complete system with a 120 MHz 603e PowerPC, 16MB memory, a SCSI hard disk of 1 GB and a quad-speed CD ROM will be available for a purchase price of around 3,000 DM (1,400 £ or 2,000 US\$, respectively) on the basis of the present market prices for the components."

"We hope that in just about one year from now we will even be able to offer a 150 to 166 MHz 603e-processor at this price", anticipated Wolf Dietrich. "In terms of performance the processor has no problems in keeping up with a Pentium processor with an equally fast clock. However, there is no sign of any comparable graphic performance anywhere (in the PC field and the features of our systems will be difficult to match." There will be a similar system available with a PowerPC 604-e processor and 150 MHz for about 4,000 DM (1,800 £ or 2,700 US\$, respectively).

Citing possible patent requirements, phase5 refused to be more exact in their description of system features until at least the end of June. However, phase 5 did state the new computer system will be supplied with a new operating system written in Native PowerPC code, but with binary compatibility with Amiga-OS 3.x. phase 5 claims they have more than 250 developers, including practically all noted commercial software suppliers in the Amiga field, as registered developers for the PowerUp program. phase 5 stated that the registered users will now be able to order the PowerPC Beta developer boards which will "mean the green light for the hot phase of the world-wide software development." To underscore this, phase 5 had an acknowledgment and testimonial from Motorola. phase 5 will not only create PowerPC boards for Amiga 3000/4000, but they will also create boards for the Apple Macintosh 7500/8500/9500 series.

phase 5 on Amiga Technologies

In an unprecedented move, phase 5 also discussed their relationship with Amiga Technologies. "To our regret we found that Amiga Technologies offers us no sort of outlook or basis for developing into the future", stated Wolf Dietrich. "The first year of Amiga Technologies was marked by a continued chain of wrong decisions which have been responsible for the bad situation in which the company now finds itself. The results must be adequate to the objectives set in the spring of 1995 and in this respect they are more than disappointing. There is no getting away from this."

"In fact the same mistakes were made that were previously made at Commodore and partly by the same people. For example, attempts continue to keep technically outdated products on the market at unrealistic prices, which is particularly true in the case of the A4000T. Another point is that the marketing concepts are completely outdated, there is

an absence of any kind of futuristic vision and a lack of any independent development, which is so pronounced that today AT neither has any 68060 technology to show for itself nor even a sign of any PowerPC technology. The brief spark of any independent development was extinguished again by the latest wave of redundancies." He went on to say, "Finally, the only thing that can be said about the activities of AT is: They should have asked someone who knows his stuff."

phase 5 questioned VIScorp's ability and willingness to finance the development of a new generation of Amiga products. They mentioned that VIScorp had not answered any of their calls and they questioned the effectiveness of VIScorp's French meeting. phase 5 stated their doubts by comparing them to Escom. Wolf Dietrich stated, "For a start we had exactly the same expectations a year ago when everyone thought that the giant ESCOM would get things moving at Amiga from a standing position and quickly produce a new generation of Amiga computers for a more competitive price."

phase 5 digital products is based in Oberursel near Frankfurt and it is entirely owned by its founders, Gerald Carda and Wolf Dietrich. phase 5 launched its first product line in 1992 and it has received 20 awards for Product of the Year in Amiga journals since then. In 1995 phase 5 supplied accessories to the value of some DM 12 million (5.5 million £ or 8 million US\$) in the Amiga market alone. Since the Christmas season of 1995 almost 30,000 hardware products have been delivered.

phase 5 digital products, In der Au 27, 61440 Oberursel, Germany, +49 6171 583787, Fax: +49 6171 583789, Email: mail@phase5.de and oder: aproject@phase5.de

VIScorp

An account of their May 19th meeting by VIScorp's David Rosen was placed in their Web site. Mr. Rosen wrote, "It was a successful event, drawing over 250 people!"

"The purpose of this gathering was two-fold: first, to provide an opportunity for VIScorp to introduce its senior management and corporate vision to the Amiga community and, second, to secure valuable feedback from the community as to their concerns and suggestions about the future of the Amiga."

According to Rosen, the day-long event was divided into four major parts: a morning session of presentations and Q&A; an informal lunch during which participants could meet and discuss the morning session, an afternoon session of two parallel workshops (one with developers and the other with vendors/distributors while users and the press circulated between workshops), and a concluding summary session followed by a reception. The morning session was carried in real-time on the Internet's chat services, the IRC, and many people throughout the world participated.

The morning session featured VIScorp's Bill Buck (CEO) who provided the opening introduction and laid out VIScorp's corporate mission of a twin set-top and desk-top business — this mission is

anchored in a fundamental commitment to the Amiga OS and its long-term maturation. Bill made clear that VIScorp's commitment to the Amiga computer was based on a strong belief that it could be a profitable business once again. Bill reiterated the fact that VIScorp had not as yet secured ownership of the Amiga and, therefore, could not layout specific plans. Nevertheless, in anticipation of the acquisition, VIScorp had initiated preliminary discussions with a number of companies (e.g., Motorola) as to further platform development. Bill concluded his presentation with a demonstration of the "ED" set-top appliance and a discussion of the company's belief in the long-term opportunities of the Internet/Web.

Don Gilbreath (VP, Engineering) and Carl Sassenrath (Director of Software) provided in-depth technical discussions of the "ED" system as well as some likely developments of the Amiga OS. Don discussed the performance capabilities of some of the key components of the new "ED" motherboard. In addition, he showed a new 060-based motherboard which could be made available immediately and would increase Amiga performance by fourfold.

Carl Sassenrath, a member of the original group that wrote the Amiga OS, provided a detailed discussion of some of the additions currently being implemented for the ED/Amiga OS. He outlined twenty-four (24) specific additions to the OS that were being developed for the set-top environment and which will enhance the overall performance of the Amiga (they will be provided to developers separately). Both Don and Carl discussed some of the possible future steps that VIScorp might take if it secured Amiga, including a review of a possible relationship with Motorola for an Amiga PowerPC; they also identified other possible migration path options, but stress that all these ideas were purely speculative.

David Rosen (VP, Marketing) further elaborated on Bill Buck's presentation, clarifying VIScorp's overall objectives of the twin set-top and desktop strategy. He made clear that the company had originally secured a license from Amiga Technologies because it assessed the Amiga OS as uniquely appropriate technology to facilitate the convergence of (analog) TV, telecommunications (especially networked-based interactivity and the Internet/Web) and computing.

DraCo, Be and more?

With DraCo already offering an Amiga work-alike and Be offering demonstrations of their new multiprocessor system, the BeBox, the Amiga market is experiencing a great deal of interest. There have already been signs of some compromise as this report goes to press. Amiga Technologies has stated that they will work with anyone, but that they will retain the rights to the Amiga OS.

Amazing will continue to follow this story as it unfolds. Please watch for the next episode in the next issue.

To be continued.

•AC•



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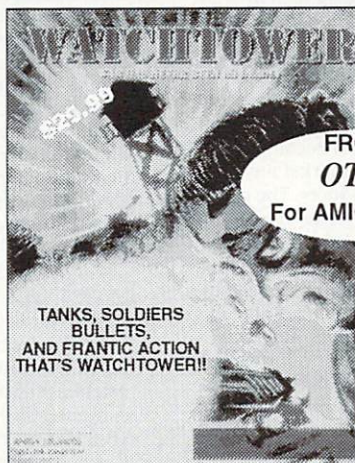
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Companies vie for the Amiga User

There is a war brewing concerning the direction of the Amiga. VISCORP, still in the process of closing their deal with Escom, has held a conference in France to discuss the Amiga. At least two other firms, PIOS and phase 5, have launched announcements of their plans to produce an advanced Amiga and operating system on their web sites. At least two other companies, DraCo and Be, have offered alternative systems to the Amiga user. It reads just like those scrolling stories at the beginning of Star Wars or Flash Gordon.

"Two years ago the Amiga market was placed in turmoil as Commodore went into liquidation. Over the next year, Amiga users were continually assured by different groups that they were not only going to purchase the Amiga, but that they were going to do so within a short time. It was not until the spring of 1995 that Escom, a company who had never said anything publicly before their bid, became the official owner of the Amiga. At the end of May, 1995, Escom held a press conference (please see the July, 1995 issue of *Amazing Computing*) in Frankfurt, Germany where they discussed their visions for the Amiga and introduced their new Amiga specific company, Amiga Technologies."

"Through the past year, Amiga Technologies has been able to restart Amiga production with A1200s built in France and A4000 Towers produced in the US. However, Amiga Technologies has not been without their critics. Many have complained that the costs of the Amiga were too high, that AT was not doing enough in marketing and promotion of the new Amiga, and that little effort was being placed on the development of the next generation of the Amiga and its operating system."

"In the same period, Escom fell under attack with losses exceeding 120 million Deutschmarks for 1995. Under new management, Escom accepted an offer for Amiga Technologies from a Chicago firm, VISCORP, who were interested in the Amiga and its abilities as a set top box for cable and interactive video. While the sale is pending, VISCORP officials are restricted by law from commenting on the Amiga or their actions..."

PIOS

On May 15, PIOS, a brand new company, announced that it would "create a successor for the Amiga community." They created a web site with a list of PIOS company executives, a strategy statement, as well as their announcement.

PIOS is headed by President & CEO, Stefan Domeyer. Mr. Domeyer was the president of Amiga Technologies GmbH, in charge of Finance, R&D, and Market Communication before VISCORP became involved. He was a co-president with Petro Tyschtschenko. Mr. Domeyer stated in the news announcement, "I know exactly the reasons we failed with Amiga. The only chance to keep it alive is a new start,

without some burdens due to the history. I think, the key to success is simply to exceed our customers' expectations on performance, quality and price. We must do it as fast, but as good as possible. So, we will form some strategic alliances with companies who have shown their capabilities in design."

In addition to Mr. Domeyer, another key personage with PIOS is Mr. John Smith who was formerly with Commodore UK, then Amiga Technologies in the UK, and will now work with PIOS to build the UK operation. John Smith said, "I want a new generation of Power PCs, and I want to make it successful in UK!"

In their strategy statement, PIOS wrote, "The mission of PIOS is to become a reasonable player in the market for consumer computer products. The goal is to reach an overall market share in all countries PIOS goes into of 10 percent until the year 2000. PIOS as a company follows the strategy of developing and marketing PowerPC-based architectures, in strong competition to the Windows/Intel monopoly. This includes the development and distribution of a native operating system, which will be recognized by the market as the next generation of the former Amiga OS 3.1. To provide a preemptive multitasking OS with quasi-real-time-behavior will be the biggest advantage of PIOS. PIOS recognizes its position as a start-up-company: small staff, small costs, small overhead. PIOS is heavily dependent on a good working relationship to its customers, vendors, design-partners, employees and shareholders. PIOS wants to become big in competence, sales, market-share and shareholder-value."

Dr. Klaus F. Bröcker, an international business lawyer, was elected as the Chairman of the Supervisory Board for PIOS. After the first meeting of the Supervisory Board, Dr. Bröcker stated, "This was the start of a new company, but if you add the experience and background of all founders, PIOS will show its will to succeed very soon. We decided to enter the North American Market already in the initial phase. Together with our partners, Mr. Dave Haynie and Mr. Andy Finkel, we will found PIOS U.S. Incorporated within the next four weeks."

The release went on to say Andy Finkel will be in charge of the project to port the OS to a native PPC OS and he will be acting as the president of PIOS US Inc. David Haynie will be their Project Manager of Hardware in charge of all hardware design activities, in which he will play an active design part as well.

PIOS also listed a Mr. X who is "a well known Amiga personage." Aside from other duties, he will also be responsible for communication and internet activities. Unfortunately, PIOS gave no contact information other than their web site at www.pios.de and they could not be reached for comment.

phase 5

In the same vein, phase 5, the German manufacturer of Amiga hardware products such as the BLIZZARD SCSI-Kit IV as well as accelerator boards including a 68060 for the A3000 and A4000, issued a proclamation on their Web site just days before the VISCORP meeting. phase 5 announced that it wanted to create a new Amiga operating system based on the Motorola Power PC.

"We will continue to give our full support to the Amiga idea because as we were among the first Amiga users we continue to believe in the advantages and superior concepts of the Amiga", stated Wolf Dietrich, Managing Director of phase 5 digital products. "However, it is high time for a radical leap forwards in technology that needs to be borne by a vision of a computer for the next millennium. We have seen too many halfhearted efforts in the last few years."

Gerald Carda, Technical Director at phase 5, stated it will be necessary to take a step towards complete innovation in order to realize such a vision. "Concepts that build up on the standard components of the PC world never offer the scope that give a computer system the lead that the Amiga 1000 had over other systems 12 years ago." Carda continued, "We will demonstrate the possibilities that are inherent in the resolute and single-minded pursuit of a new development that does not become submerged in the mainstream of adaptation to the 'Wintel' world and the general tendency towards economy in the PC mass market which more or less throttles innovation for the sake of saving one single dollar."

phase 5 was quick to state that they wanted to keep the new Amiga price competitive. Wolf Dietrich wrote, "On the basis of our current price calculation we will be able to offer unusually good value for money for which our products for the Amiga market are already renowned."

The phase 5 announcement promised that the extremely high degree of integration and the realization of novel concepts will make it possible to achieve a performance that explodes existing bounds. phase 5 claimed that, based on the PowerPC as the main processor, the new computer, in addition to the high performance of the processor, offers hardware support for multimedia (MPEG) and 3D functions, while even the basic system offers a resolution of 1600x1200 pixels at 24-bit color depth and a refresh rate of 72 Hz. At the same time special functions for image and video effects have been implemented in the hardware. In addition there are audio inputs and outputs in stereo CD quality, a video-compatible and Genlock-capable 24-bit video output and an FBAS/S-VHS video input. Along with the usual interfaces, the system is rounded off by a Fast SCSI-II controller, a network interface and an ISDN interface.

(continued on page 46)

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